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SECONDARY SCHOOL OBJECTIVES—AN ATTEMPTED RESTATEMENT

JOHN W. HARBESON
Principal, Pasadena Junior College

We are pleased to introduce to the readers of The Quarterly, Dr. John W. Harbeson, the new President of the California Society of Secondary Education, through the following article which embodies much of his educational philosophy. The article is an abridgment of a paper presented by Dr. Harbeson at a meeting of the Objectives Committee of the Long Beach City Schools, January 10, 1934. Limitations of space preclude publication of the paper in full, and we have chosen to omit those pages in which Dr. Harbeson summarized the objectives as proposed by other educational authorities and to retain in rather complete form his own analysis and discussion of desirable objectives.—EDITOR'S NOTE.

THE most important problem of the secondary school is the determination of objectives. Without them no sure progress can be made; with them a constructive, progressive course can be mapped out over a period of years. They constitute the compass of the educational mariner. They provide the criteria for the evaluation of all proposals and changes of educational reformers. The objectives of education constitute the supreme and perennial consideration of the professional educator.

Because of these facts all students of secondary education have grappled with the problem of objectives. Most authorities in the field have framed lists of their own and professional organizations have appointed commissions for their determination and statement.

Factors Involved in the Determination of Secondary School Objectives

(1) *A Sound Philosophy of Education.* Worthy objectives are the outcome of a sound educational philosophy. This philosophy is postulated upon a democratic organization of society and the place of the secondary school in such a society. It must make adequate provision for the maximum development of the individual's personality and his maximum service to society through efficient participation in social activities shared with one's fellow men.

(2) *Social Ideals of Citizenship and Government.* Such ideals rest upon principles of democratic procedure and a conception of citizenship that will induce the student to assume personal responsibility for his part in the cultivation of international good-will, world-mindedness, and world-wide brotherhood. This type of idealism makes no place for one hundred per cent nationalism.

(3) *The Democratization of Economic Life.* Absolutism has successfully resisted the application of democratic procedure to economic life. The advent of the machine has made production more technological and less

human. The present crisis has driven home the fact that labor has not as yet been permitted to share in the benefits of the machine. Improved methods of distribution can hardly be expected as long as industry is controlled by leaders armed with absolute power. If democracy is to survive as a social dynamic, it must be extended to the fields of commerce and industry.

(4) *The Recognition of the Primacy of Individual Personal Development.* The individual is the great reality. When "society" is analyzed, all that can be discovered is an aggregation of individuals. Society exists solely for the benefit of the individual, and no society can be justified which, over a long period of time, denies the maximum personal development to the humblest individual in the social group.

(5) *The Universality of Educational Opportunity.* The early secondary school catered to the needs of the university preparatory student. What a far cry from that day to this! Today virtually all of the eligible population are in attendance at the secondary school. If in the secondary schools we are providing broad, cultural and general or liberal education, this is as it should be. All are entitled to this type of an education in a democracy without cost. The street sweeper is as much entitled to an education that will guarantee the maximum development of his personality as is the bank president. Such a policy is essential for the rights of the individual; it is even more essential for the perpetuity of a stable, democratic society.

The objectives of secondary education as stated by the leading authorities is representative of the best thinking in this field. A thread of similarity runs through all of them, but each list has its unique characteristics, determined in large part by the mind-set and point of view of the author. Taken together they constitute a comprehensive statement of the objectives of secondary education to which no school has in practice as yet completely attained. In the following pages an attempt will be made to draw up a list of objectives embodying the best thinking of the past and directed toward the accomplishment of the functions of the secondary school in a modern democratic society.

A Suggested Re-Statement of the Objectives of Secondary Education

I. *Physical and Mental Health.* This is an objective which appears in every list cited above. Its primacy is universally recognized. In the past, however, our consideration has been almost exclusively of physical health. Mental health is equally deserving of consideration. The problems of adjustment in home and society, the integration of the personality and the setting up and espousal of worthy lifetime objectives must, especially in this day of social unrest and changing standards of personal and social conduct, receive greater consideration.

II. *A Capacity to Feel at Home in the World.* This involves a reasonable degree of familiarity with the physical and biological phenomena of the world and the universe as well as an understanding of and an appreciation for desirable social relationships. No one can feel at home in a world in which he is a stranger. In spite of all that is said against the teaching

of "subject matter", the fact remains that the secondary schools are charged with the responsibility of giving to the student a reasonable amount of information regarding his environment. The accumulation of this body of information by the race has been at once its most effective bulwark against the slavery of superstition and its most certain and dependable guarantee of material and social progress. Integrated courses in the physical, the biological, and the social sciences should be able to supply the secondary school student with a minimum amount of such information.

III. *A Capacity for Self-Initiated, Self-Directed Study Independent of Instructor.* The secondary school should complete the period of general education insofar as it can be institutionally provided. We all recognize that education is a life-long process. A small percentage only of those who complete the secondary school should go on to the specialization or professional education of the standard college or university. The education of no one, however, need or should stop. If the secondary school (including the junior college) has done its work well, there will be developed within the student a capacity to carry on his own education independent of instructor. The secondary school must turn out self-dependent students who are able to recognize and state significant problems and scientifically carry them through to solution.

IV. *A Constructively Critical Attitude and a Training in the Problem Solving Technique.* The attitude of the public-spirited citizen should be both critical and constructive. Too many so-called "reformers" are advocating a program of reformation by destruction. This attitude does not require a high degree of intelligence. It is not difficult to find people who can tell us what is wrong with modern social institutions such as the home, the church, and the state. What the world is interested in, however, is the reformer who, having pointed out evils, can tell us what to do to remove them. It must be remembered that the institutions of modern civilization have been purchased at a tremendous cost of money, human sacrifice, and even life itself, and the only reformer who is entitled to a hearing is he who, while viewing life with a critical attitude, is able to present to the world a feasible and constructive program as a solution. In fact, the most dangerous of all public enemies is the "reformer" who proposes to tear down without being able to rebuild better than he found.

Human life is a series of problems. The school, therefore, must accept the responsibility of training the student in the discovery and statement of problems and arm him with a problem-solving technique. The attainment of this objective will secure for the student the power to discriminate in values which is probably the most outstanding characteristic of the educated or cultured man.

V. *A Knowledge of the Worthy Objectives of Life and a Zeal for Their Attainment.* This would be tantamount to leading the student to the framing of a philosophy of life stated in terms of goals to be reached during a life career. It is a rare thing to encounter a student who plans his career in terms of life objectives. Too many students are like the girl

reported by Henry J. Forman in his book, "Our Movie-Made Children", who stated that she had never thought more than ten minutes ahead. There is, however, no more powerful incentive to successful living than definite and worthy goals set up at the end of life's career in accordance with which the student plans his life. These goals constitute those relatively few values which are of sufficient significance to remember all one's life. Most human values are more or less ephemeral and unworthy of the worry, time, and effort we give them. There are values, however, which are of such eternal significance that they should never be forgotten, and the determination of these constitutes probably the greatest discovery of life. Such life values can only be expressed in terms of maximum development of the individual's personality and his maximum contribution to society in which is included the selection of a socially-motivated life career.

These goals give meaning to life. They keep him from going off on a tangent or being side-tracked on his career by temporary allurements of social prestige, easier working conditions, or the amassing of wealth which stand in the way of his ultimate triumph—the attainment of his worthy life goals. If the secondary school can inspire the student to discover and set up worthy objectives that will require forty or fifty years to attain and at the same time fire him with a zeal for their attainment, it will have taken its greatest and most effective step in the integration of his personality and making life seem forever adventurous and worth living.

VI. *Student Self-Discovery or the Accumulation of a Reliable Body of Information Regarding His Interests, Capacities and Aptitudes.* On the basis of this body of information the student will be led during his secondary school career to make at least a tentative selection of a life work and develop interests of an avocational nature which will enable him to make proper use of his leisure time. It is hardly an exaggeration to state that the average student graduates from the secondary school without knowing much about himself. As a result of this condition he often drifts by chance alone into a vocation for which he has but the slightest aptitude. Many who lack the calibre for specialization and professional study on the upper level matriculate in the universities only to be sent home branded as failures.

Accurate and reliable self knowledge is the best answer to this unhappy situation. Psychologists are supplying us with a group of tests which, while not infallible, supply the student with important objective evidence regarding his abilities, interests, and aptitudes. The student should know his relative standing on these tests. Through an adequate guidance program he should have the benefit of expert counsel. Through the satisfactory performance of this function by the secondary school a much smaller number, but a correspondingly superior group, will attempt the university and the major curriculum of the secondary school will provide a broad, liberal, and cultural education articulated with the life of the world rather than with higher education.

VII. *A Universally Social Point of View.* The secondary school has too frequently left the students with narrow, provincial, and selfish points of view. One of its most important tasks is to raise a generation with a world outlook. International communication and mutual economic dependency have united the world in universal interests and sympathies. We need a generation of world citizens with a universally social point of view.

The attainment of this objective would have the effect of establishing in the minds of the coming generations new and more reliable criteria for moral conduct. We of the old generations have set up as criteria for moral conduct fixed codes of an objective character which have differed from people to people, from creed to creed, and from generation to generation. We have sought in objective authorities, the product of human minds but to which we have frequently ascribed supernatural origins, the criteria for right and wrong conduct. These objective authorities have been subject to such loose and varied interpretations that diametrically opposite positions on questions of sweeping social significance have attempted to justify themselves by the same authority. Witchcraft and slavery were justified in the minds of their proponents by scriptural authority. * * *

For a generation with a universally social point of view the criteria will be the social consequences of the proposed actions or policies. If the final resultant is socially beneficial, if it leaves the world better and happier than it was before, it must be held as right, the statement of any objective or fixed authority to the contrary notwithstanding. If the resultant is antisocial in character, if it leaves the world poorer and more unhappy than before, it is immoral and no authority to the contrary can be accepted in justification. Fixed codes of morality remain unchanged, but moral standards progress from one generation to another. The true criterion must lie in a socially intelligent people actuated in all their conduct by a universally social point of view.

VIII. *The Ability to Make Wise Use of Leisure Time Through Constructive Activities Pursued Because of Interest Rather Than the Pressure of Economic Necessity.* This idea conceives of leisure time as the opportunity for *creative activity* pursued because of interest. The use of leisure time for creative activities is not a natural tendency or a series of activities which one would do anyhow. It is easier to pass away the vacant hours in idle passivity. The proper use of leisure time must, therefore, be conceived of as an objective for which training is required. It involves the development of avocational interests which fling a challenge to the creative instinct.

In view of the steadily increasing amount of leisure in the new machine age a training in the wise use of leisure constitutes an increasingly significant objective of education. It is the obligation of the secondary school to explore the interests of its students and develop an abiding fascination for certain activities of an avocational character. This will prove to be the spring of perpetual youth. A man grows old, not by the passing of the years, but by the passing of his interests.

IX. *The Spirit of Good Will—The Great Dynamic of the Moral Life.* Man cannot live by rules and regulations. He cannot always be on his good behavior. He cannot stop to think before taking every step in the routine of his daily life. The thing that reveals the true character of an individual is that which is done in an emergency when there is no time to stop and think. There must be a self-initiating motive force toward the moral or social way of living. The answer is a spirit of life—the spirit of good will. No man is apt to wander far from the path of rectitude who is actuated by a spirit of good will. It will be the dynamic incentive toward personal righteousness and social cooperation.

Suggested Methods for the Attainment of the Objectives of Secondary Education

I. *The Development of Ideals, Traits, and Attitudes.* The attainment of the objectives of secondary education is dependent in large part on the *will* to action. Knowledge alone does not constitute a panacea for the world's ills. A social intelligence curriculum may not make the student more socially minded. In fact, a superior knowledge of social phenomena may make of the selfish and anti-social individual an even more dangerous member of society. There is need of a social point of view and a will to cooperate in the attainment of social objectives. The objectives enumerated above are conceived of in the light of social consequences. Their attainment is contingent far more upon the development of character traits, ideals, and attitudes than upon the amassing of subject matter.

II. *The Teaching of Each Subject with a Consciousness on the Part of Both Teacher and Student of the Objectives to Be Arrived at in the Course.* Subject matter is not intrinsically worth while. It can be justified only as a means to the attainment of worthy goals. There is need for a re-examination of secondary school courses to determine the extent to which they contribute toward the objectives. Much of the content of secondary school courses today can be justified only on traditional grounds. It is astounding to contemplate what might happen to certain of our most popular courses if their content were subjected to a social evaluation.

III. *The Organization of Subject Matter in Terms of Activity Projects.* Students learn by participative activity. The prevailing method of secondary instruction is, however, of a filling station variety. The ends of secondary education cannot be attained until a better educational psychology is applied in the class room.

Popular Criticisms of Secondary Education Growing Out of Our Failure to Recognize the Objectives of Secondary Education

I. *The Pursuance of Secondary Education for Its Own Sake.* The secondary school course has too often been conceived of as an end in itself. Students continue in school because of the prestige of high school and junior college graduation. There is a social value in the mere possession of a diploma. The completion of the secondary school confers an unearned social status and respectability. The secondary school, however, must con-

tribute some real and tangible values else sooner or later a disillusioned tax-paying public will refuse its support. If the secondary school cannot be justified on the basis of a successful realization of worthy objectives it cannot be justified at all.

II. *The Fostering of Individualism Rather Than the Social Attitudes and the Capacity for Shared Activities.* This criticism is the direct outgrowth of our failure to attain the social objectives. As long as we confine our emphasis to subject matter and the conferring of social prestige we shall continue to nurture a generation of selfish individualists who know not how to cooperate with their fellow men. The secondary school must reorganize its methods to conform to the social objectives which we have set up as our ideals. The selfish competition for high marks in subject matter must give way to the activities of sharing and contributing. The focus of attention must be shifted from the subjects to the students.

III. *The Subject-Centered Rather Than the Student-Centered School.* The teaching of subjects is justified in the upper division and graduate school of the university, but in the secondary school the subject must always be subservient to the welfare of the student. Failure to attain the social objectives of the secondary school is to be accounted for in large measure by our emphasis upon the subject rather than the needs of growing students. Our subject matter curriculum has been held sacred and inviolate, and we have never hesitated to break the child to conform to it. The objectives of secondary education, however, cannot be attained until we have a curriculum of sufficient flexibility to be bent to the needs of the child.

Conclusion

The above statement of the objectives of secondary education has been made with the specific purpose of realizing the supreme aims of any intelligent philosophy of life—first, to inspire and to enable the student to attain his highest personal development; and, secondly, to equip him for the making of his maximum contribution to society and to fire him with the great desire for its accomplishment. These are the life purposes that give meaning to human existence and which glorify every routine human activity by giving it a part in the consummation of a life plan. In this day of critical evaluation only those social institutions are likely to survive which offer a constructive social program.

PEDAGOGICAL FUSION

When Cultural and Vocational Subjects Blend, What Happens?

BYRON E. ELLIS
Los Angeles Junior College

FOR decades prior to the great European conflagration, our educational leaders had been in a state of lethargy, scarcely cognizant of the social demands that were pressing vocational education forward as one of the large movements in social economy. Toward the attendant problems, intricate and baffling, they had maintained a serene, academic aloofness; possibly the same slightly contemptuous indifference which characterized the attitude of our scholastic aristocracy in America toward manual labor. Since the Great War social forces have been at work molding not only public opinion, but American educational philosophy to the extent that vocational education is now the realization of a dream which our truly great vocational pioneers dared to dream.

The Fusion of Vocational and Cultural Education

What was the dream? That one day vocational and cultural education might be fused in their correct proportions. This balance of skill and vision is difficult to maintain, but to this end Los Angeles Junior College has pledged its energy. Director William H. Snyder has had the rare privilege of bringing to fruition that type of educational culture which can most advantageously combine these two elements. Although the junior college, as a distinctive unit, is in its infancy, it has already contributed something of moment in the field of quasi-vocational training. There are many encouraging portents that today's education is being retooled to shape tomorrow's needs, and in this experimental adventure Director Snyder has taken a prominent part.

Bitter has been the struggle between the cultural and practical in this country and it will continue to result in boundless confusion so long as both are narrowly conceived. It is with these opposing forces that Los Angeles Junior College hopes ultimately to effect a reconciliation and weld them together in new basic, educational concepts—unhampered by tradition, uncircumscribed by precedent.

I can hardly do better than quote the words of President Arthur E. Morgan of Antioch College:

> Insofar as the liberal arts college stands for a perpetuation of the traditional conflict between vocation and culture, it seems doomed to play a constantly decreasing role in education. In a day when most of the occupations of man involved little more than manual skill and the repeated rule-of-thumb formulae, the concept of vocation as illiberal may have had some basis. With modern application of all the sciences and arts to vocations, and the successful scientific search for principles within the operations and the purposes of the vocations themselves, it is no longer true. It is rapidly becoming a fact that study within one's voca-

tional preparation is an important means of freeing and liberalizing the mind. This being true, the inevitable trend in education is toward the rapid thinning of the traditional educational wall between vocation and education. The liberal arts college will survive and render service in proportion as it recognizes this fact and brings its course of study and administrative set-up into effective conformity with it.

Strong words are these by the president of Antioch College, but they have found their crystallization in the attempt which Los Angeles Junior College is making to fuse the cultural and vocational in its most popular courses—the semi-professional. Here the trail is being blazed which is leading to prestige for the vocational; which will establish the two on a parity. To this end were the sixteen (they have now become nineteen) semi-professional courses established, and this work has received the major emphasis, both from the financial and pedagogical standpoint. These courses are built to train for those semi-professions, occupations which are above the trade level but below the professional level, for which a two-year course beyond the high school is adequate. Before this work was attempted, there was a definite gap in the educational ladder. No publicly-endowed organization was training for this particular occupational level. Thus the junior college has come forward as the prophet of a *New Deal* for youth. That this occupational field is worthy of serious consideration is brought to our attention by a recent study which shows that the average salary of the two-year technical student is almost equal to that of the four-year man for the first fifteen years. Two-year courses covering banking, aeronautics, civil engineering, secretarial training, drama, mechanics, publication, *et cetera,* to name only a few, must be both vocational and cultural.

Cultural Values of Vocational Education

In these courses are combined skill and technical knowledge with good citizenship and social standing. It provides the student with vision as well as skill. If one considers the individuals employed in the semi-professions throughout the country, he at once realizes that here are to be found the "men of affairs" of the nation. If the junior college can meet this educational need, it will have solved one of the most pressing problems of American education in the present generation.

John Dewey, professor of philosophy of Columbia University, says, in commenting upon the value of vocational education:

> If you go into a laboratory and see a student devoting himself to a section of a worm, you do not, probably, object. That is, of course, zoology; it has its recognized place in the educational scheme. But if you find a course listed appertaining to laundry work, your susceptibilities are offended. The latter may indeed be narrow and confining, but so may the former. Either one may be so utilized as to give understanding and illumination—one of natural life, the other of social facts and relationships. The learned professions have a background of centuries of development. But they, too, were once essentially trade schools.

Greek and Latin for the budding young minister attending Harvard in the early days were strictly vocational subjects. Their mastery was necessary to his livelihood. Later they were justified in the curricula for

their cultural worth. Thus we see that the vocational tools of the past became the cultural training of today.

Although time may have modified the validity of the ancient Hebrew saying that, "He who does not teach his son a trade, teaches him to be a thief," yet much truth is here expressed. And in these days of technological unemployment and constant readjustment, one trade does not suffice. We are now in the throes of creation—the evolution of an educational structure which is more nearly the embodiment of our democratic philosophy of education. Let us assert with Andrea Del Sarto that "A man's reach should exceed his grasp," and then we may picture what Los Angeles Junior College is attempting; first of all, to give the student plenty of "grasp," but at the same time open those doors and point out those roads which lead to a full life, lived richly and advantageously. A slogan which is the embodiment of this philosophy of education is aptly expressed in these words by Director Snyder, "Help them to make good in life." This is the watchword at Los Angeles Junior College. The faculty of this institution feels with the director that education which does not prepare for living is dead and belongs in the archaic archives of the past and is not fit to foist upon a system dedicated to progress.

The junior college must aid in the attainment of some skill which will enable the student to enter productive employment. Only in this way can be averted the tragedy of one who has been educated beyond the limits of his purse. When financial stability is assured then only may one fully enjoy the fruits of culture. Education must have practical value as well as intrinsic worth, and in the attainment of the utilitarian, let no aspersion be cast upon its worth or its importance.

We have every reason to pride ourselves upon the advancement of the practical in education which has already modified the work of the junior college and is to modify the work of the university. We who are entering this work now, with every energy bent to its ultimate triumph, are indeed fortunate. Most of the bumps have been taken by men of courage and vision; pioneers of new educational concept of vocational training. We are proud to carry the banner which they have raised so high.

This spring marks the passing of a familiar figure from the junior college field, Dr. William H. Snyder*. He it was who envisaged an institution which could carry out these almost revolutionary educational concepts. He has brought his dream to fulfillment. Here at Los Angeles Junior College, an institution exists, nay, an institution within an institution; for here we have the traditional college work as exemplified by the certificate curricula carried on side by side with the more modern phase, the semi-professional. As Director Snyder resigns from his post, a lonesome spot is left against the educational horizon. The shadow of an institution is lengthened by the figure of a man.

*Refer to item on page 360.

THE ROAD TO ECONOMIC STABILITY

JOHN HENRY GRAY

Here following is authoritative material of a high order for study and discussion by classes in social science. It is an address delivered by Dr. Gray at the Cosmos Club, Washington, D. C., May 19, 1934, under the auspices of The People's Lobby.

Dr. Gray is an economist who has rendered distinguished service in both fields of education and government. He spent thirty years as professor of political and social science, first at Harvard, from which he was graduated, and later at Northwestern University and at the University of Minnesota. With the rank of Lieutenant Colonel, U. S. Army, he was a member of the board of appraisers for all property commandeered for the Army during the World War. For many years he has served as chief analyst and examiner for the Interstate Commerce Commission. He is the author of numerous reports on economic problems and more than 100 articles published in scientific journals.—EDITOR'S NOTE.

THAT no nation can endure or last long with as great fluctuations in prices as we have had in the last twenty years, is now plain to all. Nor can a nation prosper or enter safely into long time contracts, without a high degree of stability in prices. So long as business is carried on for profit, prices will depend on the amount of money, or purchasing power, offered for goods and services at any one time.

How the Bubble Is Made to Burst

Our money today, that is purchasing power offered for goods and services, consists, more than 90 per cent, of bank checks. Checks are drawn against deposits. But deposits arise chiefly from bank loans. Bank loans, at present, are granted by about 15,000 separate banks, most of them with but little knowledge of general currency needs, and each of them willing to increase bank loans without regard to general needs for currency, if the banker can make a profit thereby. Furthermore, as the chance of profit increases, he grants loans on non-liquid securities, and ties up his resources indefinitely. His only chance of getting money enough to pull through depends on the probability that other bankers will not do what he has done, and will thus forego the chances of extra profit that he has seized. Recent history shows that such a supposition has no basis, in fact thus a great rivalry grows up in granting loans, and prices go up and up until the bubble bursts, prices collapse and general bankruptcy follows with its unemployment, reduction of production, breadlines, and general disorganization and depression such as our condition today. All our fundamental economic theories are exploded.

The condition described above could exist in a new country, with vast undeveloped resources while the banking and business units were small. A failure then was hard on the man that failed, but did not destroy the whole economic system. Today credit is so universal, banks and business

units are so laced and interlaced, and many of the separate units are so large, that a failure of one of the units may destroy general confidence and break down the whole credit structure.

Under this broken down credit structure today, we are a nation of hoarders so far as we have anything to hoard. Before the stock market crash, our so-called bankers ceased to be bankers and became mere speculators, for the most part with depositors' money. Today they have become beggars at the door of the Federal Treasury and hoarders of the money handed out by the Government.

Pickled Money in the Banks

The cry of the American citizen today is for more money, and the pressure for paper inflation or government paper money is all but irresistible. That is about as sensible as the restriction of crops to raise prices, when the people have no money with which to buy. That prices ought to rise is true, but the only safe way that prices can be raised under a profit system is by placing more purchasing power in the hands of the masses, not in the frightened banks. The $6,000,000,000 inflation provided for in the Banking Act of 1933 was provided in order that the banks might loan more to business men to start the industrial machine, employ more men, and raise prices. But the fact is that loans decreased instead of increasing and the money piled up in the banks. It is said that even the hundreds of millions of dollars paid to farmers to restrict crops in order to raise farmers' prices, go primarily into the banks and remain there. The minute those checks come the bankers threaten to foreclose mortgages and call other overdue debts. Therefore, these payments instead of putting money into circulation, raising prices, and giving employment, are simply credited on the farmers' debts, and are added to the already plethoric stores of cash in the banks. These payments, like the $6,000,000,000 inflation fund, do not put money into circulation, but add to the pickled money already in the banks.

Possible Expansion of Credit

It is with money as with all our material resources. It is not more minerals, more railroads, more workmen able and willing to work that we need. It is more sense to use what we have. We are unemployed and hungry in the midst of plenty. So it is not more money or credit we need, but more sense to use what we have. Without any change in the law or in the Federal Reserve Bank regulations, without endangering our gold supply, we have surplus reserve enough—that is, surplus above what our laws require, and what safe banking requires, to quadruple the amount of our circulating medium in a day, if the bankers who hold that $1,700,000,000 surplus reserve could see their way to make a profit by making loans to the business world. This surplus reserve would justify additional loans to about $17,000,000,000. This is approximately three times the money in circulation today. If this amount of money were offered for goods, there would be no question of prices going up, that is the only

way with any safety that prices can be made to go up under a profit system. With a proper banking system there's a natural check to such an expansion of currency. The race has found no practicable check to unsecured paper issues. A political or governmental authority has no means of knowing how much paper money to print, or of putting it into useful and natural circulation. Rising prices throw the government budget out of balance, and into big deficits, and the government always then prints more money to pay government expenses, without any regard to the effects on prices or business. This always leads to destructive speculation and disaster.

Prices can never be controlled without controlling the money supply. The money supply can never be controlled except by controlling bank credit. Bank credit can never be controlled so long as it is managed by thousands of privately owned banks, each seeking private profits without knowledge of or interest in the public welfare, for at any one time the amount of bank loans controls the amount of purchasing medium offered for goods and services. Hence bank loans control prices.

Commercial Banking a Function of the Federal Government

I predict that we shall never have recovery, never have prosperity or happiness until commercial banking is entirely separated from investment banking, and all commercial banking is owned and operated by the Federal Government. When so owned and operated it must be operated primarily for public welfare, and not of profits. All long time or investment institutions must either be owned and operated by the Federal Government, or must be so regulated that all such loans shall be made from savings, and not from bank credit as was done in the last decade, to the break down of our whole banking system.

The right to regulate and fix the value of money given to the Federal Government by the Constitution, necessarily gives the right to control bank credit,—the basis of most of our purchasing power, or money. All history shows that such credit cannot be controlled so long as it is left in the hands of thousands of separate privately owned and managed competing banks, for the sole aim of each bank is the making of private profit.

The central bank of no nation except ours is actuated to the same degree as our banks by the profit motive. When private profit is the main motive of any bank, that bank cannot be trusted to determine or to influence in a large way the total amount of bank loans in a country, for that is to determine the prices of commodities and service, and stable prices mean prosperity, and highly fluctuating prices mean speculation, bankruptcies, unemployment, depression, hunger and disaster.

It is time we stopped discussing minor reforms and worn out traditional theories that have no possible relation to the world in which we live, and realized, once for all, that the fixing of the value of money is a fundamental and essential function of government in our case, of the Federal Government. This involves a complete control of commercial banking and of commercial bank credit, without such control, there can be no

stability of prices, and without a reasonable stability of prices there can be no recovery, no prosperity; nay more, there cannot be enough goods produced and distributed to keep us from starving, or to prevent our civilization from disappearing.

Let us continue to borrow money, if need be, to feed the people, but let us realize once for all that there is no salvation or permanent welfare possible till all commercial bank credit is managed directly by the Federal Government. This is the key to recovery and to all other reforms. Without this, all other efforts to save our civilization are in vain.

DISINTEGRATING TENDENCIES IN DEPARTMENTALIZED EDUCATION

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WHILE this topic suggests a merely negative discussion, a diagnostic survey of the high school problem must necessarily precede any suggestion of remedies. The chief single defect of the high school is the utter passivity toward learning which it breeds in most of its pupils. The five-year old enters the kindergarten eager to learn, each fresh experience a challenge to an alert, inquiring mind. This curiosity continues to burn more or less brightly throughout the early school years. Sometime during the junior high school years the lamp of learning begins to flicker and by the end of the high school course often goes out entirely. To mix the metaphor, in Dr. Learned's words, "Save your coupons and get a diploma" becomes the battle cry of high school and college.

In Middletown, Dr. Robert Lynd gives a thumbnail sketch of the prevalent attitude of the average high school boy or girl in his characterization of the spirit of learning in the Middletown High School:

> "In the high school, the lesson-text-book-recitation method is the chief characteristic of education. For nearly an hour a teacher asks questions and pupils answer, then a bell rings, on the instant books bang, powder and mirrors come out, there is a buzz of talk and laughter as all the urgent business of living resumes momentarily for the children, notes and 'dates' are exchanged, five minutes pass, another bell, gradual sliding into seats, a final giggle, a last vanity case snapped shut, 'In our last lesson we had just finished'—and another class is begun."

Without going into all the causes for the lack of dynamic drive in most of our high schools, we may single out one characteristic development which has always prevented pupils from getting any clear notion as to what their secondary education was all about, that is, the organization of the curriculum into subjects and departments.

Even under the best conditions of teaching and administration, emphasis on subject matter divisions seems to destroy the significance of a pupil's

whole educational experience. Dr. Bode, in *The Educational Frontier,* expresses this idea in these words:

"Compartmentalization has become a means of concealing from a pupil what he needs most to know, if he is to lead an intelligent life. It segregates aims and objectives. Subjects have aims. Education does not. Science, religion, patriotism, cooperation offer conflicts because of lack of a common, integrating philosophy."

Our pupils study mathematics with little appreciation of the importance of quantitative thinking; they delve more or less deeply into the field of the social studies without any corresponding gain in power of responsible social action; they "take English" without acquiring either a love of reading or facility in writing; they study science without understanding the scientific age of which they are a part; they dabble in the creative arts without acquiring taste.

As Dr. Neilson of Smith College describes this defect: "High school pupils come to college without any 'long view' of their subjects." A long view means, of course, the perception of relationships between facts or ideas. How can this be had from a curriculum that is a collection of fragments? With Emerson, we long for continuity:

"If Minerva offered me a gift as an option I would say give me continuity. I am tired of scraps. I do not wish to be a literary or intellectual chiffonier. Away with this Jew's rag-bag of ends and tufts of brocade, velvet and cloth-of-gold; let me spin some yarns or miles of helpful twine, a clew to lead to one kingly truth, a cord to bind wholesome and belonging facts."

A second basic defect in our rigidly departmentalized scheme is the predominance of the artificial motives that we rely upon to whip up enthusiasm for this pursuit of subjects. Teachers compete for the pupils' time. Pupils compete among themselves for marks, rewards, avoidance of penalties, for excellence in final examinations, for everything on earth except genuine, purposeful learning. They accumulate credits; they pass courses; they make the honor roll; they carry out assignments; they prepare for college. Teachers, pupils, and parents will give lip-service to noble ideals of culture and character, but in actual everyday school life, we adhere to the more tangible profit system. The progressive elementary school has demonstrated rather effectively, on the whole, that pupils can work for higher, more socially valuable motives. When will the high school and college accept the challenge of their achievement?

Departmentalized education, then, tends to defeat the attainment of the most valid of all educational aims, fine, wholesome attitudes, such as love of learning, social responsibility, capacity for a large measure of self-direction, the ability to recognize and solve problems. Face to face with the gigantic task of preparing our pupils for a new, but unpredictable social order, we perpetuate the distinctive effects of past educational disorder because we have allowed our schools to become centered in academic rather than in human interests. We continue to allow the school to be a child's world divorced from the realities of the life around them.

What is the remedy for such a situation, which fortunately is becom-

ing day by day more acutely discernible to hundreds of administrators and teachers?

Experiments Indicate Direction Secondary Education Is Moving

Broadly speaking, the remedy will be found, of course, through experimentation. Two notable and far-reaching experiments will serve to illustrate this direction in which the American secondary school seems to be moving. One of these experiments, now in effect in three Pennsylvania high schools, resulted from the so-called Pennsylvania Study, conducted under the auspices of the Carnegie Corporation; the other, that of the School and College Relations Commission of the Progressive Education Association. This experiment, which was launched in twenty-six high schools in September, 1933, is also being financed by the Carnegie Corporation.

Since these two major enterprises are cooperating, they will be outlined briefly here as three types of curricular change.

The Pennsylvania Plan. One plan, that of the three Pennsylvania schools, may be designated as the *broad fields of subject matter* type. This sounds like the same old departmentalized scheme, you may say. As a matter of fact, although it is the least radical of the three prevailing plans, it is conceived for the common purpose of all these new experiments, that is, to secure for the adolescent meaning and unity in his learning. The Pennsylvania Plan has three chief characteristics: organization of all desirable forms of subject matter experience into broad, continuous sequences of subject matter, science and mathematics, the languages, the social studies, and the creative arts. Subjects, as such, disappear and the continuous study of problems within fields takes their place. Further disadvantages of subjects are obviated by frequent cross-overs between fields by means of cooperative curricular planning and cooperative teaching. In place of end examinations a continuous, varied scheme of standard testing and careful record-keeping is substituted. A third indispensable feature of this first plan is the counselor. Throughout the secondary school period he remains as the adviser and guide of each pupil's study.

The Cultural Epoch Plan. A second form of experimentation, most frequently found among the progressive private and public schools is the *culture epoch plan.* Although different in many essential particulars from the familiar project idea of the newer elementary schools, it undoubtedly originated from their practices. Here a large "block" of each day is spent in the study of some such large problem as "How man has come to understand and control his universe" or "The medieval world and its relation to modern problems" or "A study of typical Oriental civilizations". Changing cultures thus became a means of seeing the meanings of modern life. The Culture Epoch Plans usually provide, in addition to the "block" certain free electives in the arts, mathematics, foreign languages, and sciences. Individualization of problems is also an important feature of these plans, as well as cooperative teaching. By the latter method, the chairman or director of the block acts as adviser to the group and teaches one or more related fields, such as social studies and English. At appropriate stages

of the study teachers from other fields, such as music, science, or art, come into the group to make special contributions to the problem under consideration. Due to our present social and economic dislocations these new curricular units are centering chiefly around large social questions. It is expected, as time goes on, that science, mathematics, and the creative arts may become equally valid "centers of interest".

Curriculum Plan of the University of Wisconsin High School. The third plan may be described as centering directly around the *needs* and *interests* of *adolescents.* A typical curriculum of this kind is that of the University of Wisconsin High School. In each of the three senior high school years, four constants comprise the major part of the day's work: Health, Use of Leisure, Preparation for Vocation and College, and Community Living. To serve such needs of boys and girls, the old subjects are cut directly across in order to reorganize old valuable materials into new purposeful forms. This plan is similar to that frequently urged by Dr. Goodwin Watson in which he advises that adolescent pupils should be permitted to study individually or in groups problems arising out of such immediate needs as health, recreation, use of money, community living, study of the physical world, and other similar functional realities.

Common Philosophies and Practices. All these plans are predicated on certain common philosophies and practices. Among the more typical ones are these: 1. A new conception of department heads as a cooperative, planning body, instead of custodians of vested interests. 2. The substitution of cooperative teaching for competitive teaching. 3. A curriculum based on large units or problems, derived from adolescent needs and interests, enriched by "activities" which serve not only to illustrate the abstractions of subject matter but also to bring the pupil into the realities of the community life of school, town, state, and nation. 4. The development of capacities for critical thinking, social action, and creative expression. 5. The organization of comprehensive programs of guidance and adjustment which shall help pupils not only to find useful and congenial work in a confused world but to achieve a degree of mental health that will afford them security and emotional stability.

Are these new experiments merely attempting to give to the rose another name? To a certain extent, yes, since even a new designation for reorganized knowledge may help to focus the pupil's attention on the purpose of his education. In the judgment of many persons, however, the new forces go much deeper than that. They are giving an altogether different direction to an educational process that has become bewilderingly complex and out of touch with modern social necessities and are trying to set the pupil on the road to destinations that he sees and accepts. They are substituting such new objectives as power of analysis and social responsibility for the old aims of external discipline and unassimilated information. We teachers have always talked glibly of character and citizenship, without doing much about their realization in the daily life of our classrooms. Now we propose by giving purpose and flexibility to our rich materials of instruction to help our boys and girls become socially responsible men and women.

THE CURRICULUM FOR SOCIAL INTELLIGENCE

Some Negative Suggestions

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There are times when a negation is more positive than an affirmation.—KIRBY PAGE.

Schools Do Not Mold Public Opinion

FIRST, in our efforts to disseminate, inculcate, or indoctrinate social intelligence, we should recognize that the school is not assuming the responsibility either of transforming society or of revolutionizing the state. It is not, because in its very nature it cannot. A labor college, a parochial school, or a single instructor here and there may attempt to indoctrinate a new social viewpoint, but the American public school system can never get beyong the *status quo*. Our schools do not mold public opinion, they reflect it. It is interesting that educational leaders all over the country are urging the schools to foster critical-mindedness and receptivity to change at the same time that our government is junking traditional procedures and the nation is embarking on a "New Deal".

Why is it that our schools did not launch this movement in the early twenties when the government, under Harding, was enroute to "normalcy" and Mitchell Palmer was hunting "reds"? Because education takes its mandate from the community. It knows no greater wisdom. It recognizes no higher authority.

This fact will be more readily understood when we look at that great body of teachers upon whose shoulders the burden of instruction falls. Here and there stands out one who has freed himself from the herd and achieved intellectual independence and emotional maturity. He will be tolerated, just as all free souls have been tolerated until they became so numerous or powerful that they threatened traditional beliefs. But what of the great body of teachers? Where did they study? What do they read? What are the sources of their information? Whence came their opinions and prejudices? The answer is that they are part and parcel of the great American middleclass, sharing its beliefs, its hopes, and its fears. Teachers can no more create a new state of mind, *per se,* than a man can lift himself by his bootstraps.

Even in the technical fields the community determines the nature of the school, rather than the reverse, which would superficially seem more logical. Did vocational schools build our industries or did industrial expansion make vocational schools a necessity? Did colleges start the process of technological exploitation of our natural resources or did successful practical engineers create our colleges of engineering? The same questions should be asked relative to the law, medicine, banking, and commerce

and in each case the answer will be, schools do not initiate, they carry out instructions: they elaborate, they refine, they rationalize social processes.

Not only do our schools lack the will and the vision necessary to any program of conscious transformation of society but they have little capacity for modifying the social concepts of boys and girls. Here and there, brilliant exceptions will be noted, but the unfailing rule is that youth assimilates its social, moral, religious, economic, and racial concepts as unconsciously from the social atmosphere of the community as it does oxygen from the air it breathes. The school has its place in education, but no one knows today just what that place is. It does the school little good, and education no good at all, to give the school more credit than it deserves for whatever its share in education may be.

No Philosophy of Education Yet Recognized

A second misconception which is bound to add to the confusion of those who attempt to construct a curriculum of social intelligence is the oft-repeated dogma that we must evolve and accept a philosophy of education before we can decide what we ought to teach. The obvious reply is that we have been teaching for a good many years now without any recognized philosophy; and, philosophy or no philosophy, we cannot escape the responsibility of deciding what activities shall characterize our educational program. We must teach something. I am willing to admit that our whole educational task would be simplified if we had a philosophy, or a mandate from heaven, to guide us, but for some reason none of the workers in our field have ever been able to reach the summit of Mt. Sinai. We must proceed without the tablets of stone.

For years, curriculum experts and doctors of education have been pushing the responsibility of developing an educational philosophy off on to teachers. To the best of my knowledge, neither the "marms" nor the doctors have done more than talk about the matter. The reason for their failure ought to be fairly apparent. We have no philosophy of education because America has no philosophy of life. "A changing civilization" is the phrase that best describes the present state of our culture. Changing—but toward what goals? Guided by what standards of value? No man can write a philosophy of education for a society that is in flux.

In the midst of confusion we have to go on teaching. We shall accept society's recent verdict that a new social order must be established and, as though to prove that the community has made up its mind, we shall construct a curriculum for social intelligence. As the community turns its back on traditional institutions and experiments with new forms, so shall we transfer our emphasis from historical information to contemporary evaluations, from facts to "meanings". In a shifting present and an uncertain future, we shall stress pupils' interests more and adult needs less; immediate utility will take precedence over deferred values. Not knowing what kind of lives pupils or their children may be called upon to lead we will put our effort into enabling them to become competent members of contemporary society. Lacking a philosophy, we can take advantage of the prag-

matic advice of Doctor Thomas H. Briggs, that we "teach them to do better the desirable things they are going to do anyway", not neglecting to develop the habit of questioning the desirability of the things they are doing. We must not overlook the second bit of his advice "to reveal higher activities, and to make them desired and attainable".

Social Intelligence Possible for the Few

We should frankly recognize that social intelligence is for the few and not for the multitude. The Christian dogma of the equality of all men in the eyes of the Creator, the Rousseauan doctrine of the perfectability of "natural man", the English Common Law guarantee of the equality before the law, Thomas Jefferson's statement in the Declaration of Independence that "all men are created equal", and the traditions of our pioneer civilization have all contributed to the American tradition that one man is as good as another. Of course no one, when put to it, really believes this folk myth but we talk as if we did, and what is infinitely worse, all of our political and most of our social institutions are based upon its assumptions.

Those who build the curriculum cannot permit themselves to indulge in such delusions. One of the functions of the curriculum for social intelligence should be to catch, from the great stream of humanity flowing through our schools those comparatively rare individuals who are capable of independent, creative thought and to nourish and cultivate these qualities in them. The struggle to achieve social intelligence is the struggle of the individual to differentiate himself from the mass, it is the struggle for personal maturity in a childish world.

Social Intelligence Not an Academic Product

Another false assumption which we must definitely trample underfoot is the scholastic dogma that social intelligence is an academic product. It assumes that the chief characteristic of school pupils or college students is mind; that minds are capable of knowing; that minds are made to be trained and filled, and that the proper material for this training and filling is knowledge. Plato's statement that, "One becomes educated by taking on those materials, ideas and facts of which 'education' is madeup", holds no meaning except for a very limited intellectual group. Education is experience, and experience cannot be stored up in books, certified by curriculum experts, and guaranteed by teachers; nor can it be taken on in organized fashion by students, willy-nilly, in order that they may become good students.

The materials of the curriculum must be envisaged in the perspective of experience. ***They must be presented as interpretations, not knowledge; as meanings rather than facts; as means of understanding and integration, not as matters of information and instruction.***

This last statement might be taken for the creed of the Progressive Education Association. It is an academic declaration of independence for the secondary school. It sets up new and meaningful goals within the grasp of all strata of the student population. A student who fails in the

traditional curriculum because he is not interested in facts or is not able to retain them until the next testing time may gain understanding and may comprehend meanings that the factually-minded student misses. Social intelligence implies meanings and understanding; but if these are to be made the goals of the curriculum and the desiderata of education, it will mean a complete revolution in conventional practices. New techniques for testing, rating, and recording accomplishment will have to be developed, and a much finer degree of integration between departments will have to be effected, if our departmental organization retains any similarity to its present form. The conventional study-lecture-recitation-examination procedure can be relied upon only so long as fact and knowledge remain the goals of education, but experiences and first hand contact are necessary if one is to understand modern society, if one is to interpret the meanings behind external appearances. A new, creative experience technique is called for. Up through the elementary grades creative experiences can be brought into the school room or can be lived in the imagination. After that age normal children turn with increasing vehemence toward the world, and they want the real world, not a schoolroom imitation. They want industry, not talk about it. They want politics, not bookish civics. They want experiences, not moral axioms. The task imposed by such a program is tremendous. It knows no bounds but the world. It calls for nothing less than enlisting the whole community in the task of education.

EVERY CURRICULUM A SOCIAL INTELLIGENCE CURRICULUM

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THE Carnegie Report on the condition of higher education in California, released July 1, 1932, presents as one of its strongest recommendations the principle that every junior college should offer a curriculum for the development of social intelligence. It states that this field has hitherto been neglected and argues that the fault should be immediately repaired. Events in our national life occurring since the publication of the Report have proved conclusively the correctness of the view expressed by the Commission. Is it not now time to advance one step further and to apply this principle to all junior college occupational curricula? Lower divisional curricula may be omitted from consideration on the ground that the junior college is not responsible for them since they are dictated by the universities.

Every Curriculum Should Develop Social Intelligence. The Commission would seem to indicate that the social intelligence curriculum should be one of the many curricula offered for election to students. Doubtless such an arrangement would allow a very full development of the various subjects and would present a well-rounded curriculum, but from the standpoint of reaching students is it the most desirable arrangement? Those

students who elect that particular curriculum will receive a thorough training for social intelligence, but how will that benefit the much larger number who feel obliged to provide themselves with the means for a living and who therefore elect curricula with specific vocational ends? The argument inevitably leads us to the position that each and every curriculum should contain a certain proportion of subjects which deal with the development of social intelligence, or, to put it more broadly, that there should be but one basic occupational curriculum in a junior college instead of the many usually offered.

The last statement is predicated on the position that all of the students in our public secondary institutions of learning should receive training to fit them to take their places in the new social order which is at hand. The few may desire a more intensive training, but all should devote a generous amount of time to studies along this line. In the past, occupational curricula have been constructed largely by the departments concerned, with the result that the irreducible minimum of subjects prescribed for all has been included and the remainder of the time has been entirely devoted to the tool subjects of the particular department. That minimum usually has not demanded much attention. The resulting curriculum therefore might better have been one in a private institution operated for the personal profit of the owner than in a public junior college devoted to the education of future citizens.

Four Semester Hours for Social Studies. One quarter of a student's time is certainly not too much to devote to learning how to live with his fellows and this amount of time should be required of all in order to make it effective and to provide a common background of training. This background is the concrete presentation of the policy pursued by the junior college in its purpose of public education and represents the central idea on which its reputation is staked. Four hours per semester then will be given over to a central social intelligence course which will commence with the first semester of junior college residence, will continue until graduation, and will be attended by all students both regular and special. The content of this course may be worked out according to the wisdom of a particular college faculty or it may follow the excellent outline suggested by Bird, McDaniel, and Ewert in the CALIFORNIA QUARTERLY for January 1934.

Ten Semester Hours for Tool Subjects. The remaining twelve semester hours should not be given over entirely to tool subjects. There seems to be a legitimate criticism of many occupational curricula that the enthusiasm of the department concerned has run away from its judgment and, in the effort to equip the student with tools by which to gain his bread and cheese, it has left out of consideration the fact that man does not live by bread alone. Without question tool subjects are indispensable, but the relative proportion of social intelligence, tool, and general culture subjects is a matter of administrative policy and this policy when once determined upon should be applied impartially to all departments. No junior college is able to furnish the student information which will be so complete that

he need never again study when he has once settled himself in the occupation of his choice. On the contrary, if the junior college supplies a groundwork and stimulates an investigating turn of mind it has done its duty by the occupational student. The groundwork should gain him a foothold in his job and his inquiring mind should secure him his promotion by subsequent study of the possibilities of his position present and future.

Proportion of 4:10:2 Semester Hours Suggested for Social Intelligence, Tool, and General Culture Subjects. As an administrative policy then we suggest a semester proportion of 4:10:2 hours of social intelligence, tool, and general culture subjects. As stated above, the social intelligence course occupies the four hours and might be given on Monday, Tuesday, Thursday, and Friday to all students. The ten hours of tool subjects may be divided according to the requirements of the department concerned. The two hours of general culture subjects are not intended for exhaustive —and exhausting—treatment of any one subject. This amount of time while scant indeed may yet produce good results. It will certainly call for a recasting of subject matter, for the elimination of much that is purely academic or traditional, for the requirement of wide reading, and for the insertion of matter which is concrete and up-to-date. The prime purpose again should be the development of an inquiring turn of mind which can build on a comparatively small foundation for the production of results in later life. Abandonment of the word "terminal" as applied to occupational curricula should be made functional at every point of instruction.

What General Culture Subjects May Be Introduced. What are the subjects to be introduced under the heading of general culture? Since there are but eight semester hours in the whole two-year junior college course for these subjects the time must perforce be assigned with care. The selection of subjects is again an expression of the underlying policy of the administration and should include studies of whose value the administrative officers are convinced. Suggestions which might meet with favor in one institution very possibly would not suit the policy of a neighbor. For that reason the following outline should be taken as representing a purely personal opinion on the part of the writer. The underlying idea is that of the profitable use of leisure time.

First Semester	*Third Semester*
Music Appreciation	World Literature
General Psychology	Science Survey
Second Semester	*Fourth Semester*
Art Appreciation	World Literature
Problems of Philosophy	Science Survey

Is Too Much Attempted in the Proposed Program? The most obvious criticism of this program is that too much is attempted. A specialist would raise his hands in horror at the idea of giving even an elementary notion of general psychology in eighteen periods. A second criticism may

be directed against meeting a class but once a week. Instructors say that interest cannot be maintained when the class meets so infrequently. The argument might be made that it were better to give up the two periods per semester to but one subject rather than to spread the student's time so thinly. A third criticism can be made of the choice of subjects but, as just stated, this choice is a personal one and other subjects may be substituted at the will of the administration.

To the first criticism an answer was given a few paragraphs ago and one further point may be added. Is it not time to get away from specialists and specializing? The general course in social intelligence is a case in point. In this course instruction will be given in all of the social sciences not as ends in themselves but as means contributing to the upbuilding of a social consciousness. Necessarily attention will be turned away from any single subject as such and will be directed towards the fabric as a whole. Consequently no one subject will receive the amount of attention which a specialist in it might think necessary for a reasonable acquaintance with it. This viewpoint is not radical nor is it even new, for the interrelation of the various physical and natural sciences has long been insisted upon and it has been shown that a specialized training in one science is not sufficient for an adequate comprehension even of it. The argument is not for an incomplete preparation on the part of the instructor but rather for a more complete presentation of the subject. With this idea in mind an instructor can make use of a comparatively small amount of time for presenting a subject as a stone in the arch even though he might prefer to construct the whole arch by himself.

To sum up: the maintenance of a single basic curriculum consisting of a set proportion of social intelligence, tool, and general culture subjects will insure that all students will devote the same relative amount of attention to the three parts of the curriculum; an inquiring turn of mind is the best asset to be obtained from the junior college course of study; the amount of time to be devoted to a single subject is necessarily limited but it will serve when that subject is considered as a means rather than as an end.

EDUCATIONAL EXPERIMENTATION IN OUR PUBLIC SCHOOLS

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HUMAN lives are not to be trifled with or experimented upon unless it be done for an incontestably desirable cause and at the hands of experts in such a way that, whatever may be the final value of the experiment, the individuals used as subjects may receive an equal, if not greater, return for their time and endeavor in lieu of the returns accruing to their fellows in general from an older, already established, method or procedure. Such a return can be vouchsafed to these individuals provided we limit our field of experimentation to a few specific schools where the process is under the guidance of master teachers and is carried forward under controlled conditions.

Should educational administrators and teachers, then, be deterred from experimentation? In general, yes, for they are executors, artists, not scientists. They are people who apply educational principles and scientific findings to life in the schoolroom. They have neither the time nor the scientific preparation, nor do they have the controlled conditions which are necessary for scientific experimentation. In general, they do not possess the necessary scientific temperament that should pervade the scientific research worker. Consequently most of them should not even wish to undertake such a task. If, on the other hand, by experimentation we mean the ability to choose among methods and materials the ones which in a particular community and in the hands of the local teaching staff would lend themselves most readily and efficiently to success in their educational endeavor, then, I believe, both superintendent and teachers are within their full rights in doing so.

We cannot regard either the schools or the school-population as a field proper for experimentation without the expertness, or the foresight necessary for responsible guidance of human lives.

A general experimentation carried on everywhere and by almost everybody engaged in school-work, if it is to be of any consequence whatsoever, is a very costly undertaking. The expenditure could far better be used for more important functions of applied education. One or a few experimental schools would be much cheaper.

There is, therefore, this one recurring idea, in regard to educational experimentation which commends itself in almost every respect. It is not meant to take the place of the scientific research which is sponsored by our universities; it is rather meant to supplement such studies and researches. This idea is that each state should have one or more truly experimental schools. Here new theories and methods should be tried out under controlled conditions. The faculty members in this type of school should be the very best teachers obtainable. They should be well trained and know the theory of modern education as well as their particular subject-fields, but, above all, they should be alert, unbiased, progressive, capable of conceiving a new idea and thus also able to give it a fair chance and an expert working out. The principal of such a school ought, in a large measure, to be an educational scientist and at the same time a sane person with his feet on the ground, capable of judging the practicability as well as the scientific validity of a new method, a new curricular development, or a new objective.

The experimental school should be established in a populous locality whence pupils from every type of home and every stratum of society could easily be drawn. The children should furnish a cross-section of a normal school-population. A group of children of such a description is a necessary prerequisite to make the experimentation of general value.

In this school, children should be scientifically grouped. Groups for study and control groups could thus readily be developed. Without control-groups the results of an experiment become more or less a guess-work.

In such a school, because of its expert leadership and because of the type of its teachers, a new method would be adequately comprehended and applied, a new objective would be clearly envisaged and pursued, and new tools and materials would be properly handled. These are factors to be reckoned with and yet are not properly considered in a number of instances where so-called educational experimentation is undertaken. Illustrations of this point come to our minds when we recall what now and then is given as a parting announcement from certain superintendents at the last general faculty meeting for the year. It may take the form of an injunction of the following types: "Next fall we shall begin to teach according to the X-method." Few of the teachers are ready for such an experiment. The method itself may be known only in the most superficial way. Its real import and implications are totally unknown. And, naturally, the enthusiasm for a new venture is entirely lacking. What will really happen is that either a new name will be used for an old process, or, perhaps, what is still worse, chaos will ensue and the children will suffer.

In the experimental school, when a new procedure has proven really superior to an older one, it will be rechecked to see whether it remains superior even upon a second trial. Certain modifications and improvements will also be introduced as a result of the first experience, and the process will go on until the new departure is valid, refined, reliable, and practical. Then it will be offered to the teaching profession at large. This can best be done by a careful report setting forth in detail all that is necessary for a definite comprehension and appraisal of the innovation. As a means of further communication to teachers and for its practical demonstration, it should be offered as a course in a summer session where it would be available for a large number of teachers. In some foreign countries this procedure is followed whenever the new departure is of such significance that the teachers really need expert training to make it successful in the schools. All teachers are then summoned for a six-week course or more, perhaps at the expense of their community or the state. This procedure generally leads to a unanimous and concerted action in the field.

Should a superintendent, or any other worker in the field of applied education, conceive a new idea concerning either curricular problems or methodology, he should be encouraged to present his conception and tentative plan for its application to the principal of the proper experimental school. If the idea should seem to be promising of valuable improvements, it would then be tried out under the controlled conditions of the experimental school and, if successful, would be reported upon in the same manner as has already been outlined. In this way, no really valuable educational ideas would need to be lost, nor would anyone need to feel that his ideas would be set at naught because they were unable to gain due recognition.

Summary

1. General, promiscuous, educational experimentation should not be carried on in our common, public schools.
2. The public schools exist for the education of children under the direction of teachers who aspire to become artists in their performance.
3. The necessary scientific control for successful experimentation is not possible, in general, in our public schools.
4. The enormously overlapping and often misguided efforts of such general experimentation are too costly both in money and lives.
5. Experimental schools, where scientific control can be had, under expert leadership, would be much cheaper, much more efficient in their experimentation, and much more careful of the real educational growth of the children-subjects.

THE FORECASTING EFFICIENCY OF GRADES IN EXPLORATORY LANGUAGE

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THE very substantial correlations which have from time to time been reported for the relationship between standing in successive semesters of foreign language work, as indicated by the median coefficient of .63 in Table I, and the generally consistent correlations reported by Odell[1] for the relationship between achievement in high school and college foreign language, have lent plausibility to the hypothesis that an actual tryout in foreign language work should furnish a more valid measure of prospective interest and aptitude in language study than either intelligence quotients or prognosis tests. It was to a large extent on this basis that the so-called "General Language" or "Exploratory Language" course gained favor for junior high school curricula.[2] In order to obtain objective evidence concerning the validity of this hypothesis, the accompanying study of the forecasting efficiency of grades in exploratory language was undertaken in 1932.

The data are drawn from the records of the Frick Junior High School (116 cases, high seventh grade) and Westlake Junior High School (19 cases, low seventh grade) of Oakland, California, during the school year 1930-1931, and represent the correlations (Table II) between end-semester grades in exploratory language and final grades of the same pupils in first semester Latin. Correlations were computed separately for the students who continued foreign language work with a different teacher from the one with whom they were enrolled in the tryout classes, and those who continued with the same teacher. The motive for this differentiation was the belief, inspired by a previous study of the problem,[3] that students might be expected to receive more nearly the same marks if they continued with the same instructor, than if they transferred to another, and that the correlations for this group would consequently be higher. The opposite situation revealed by the findings in Table II, however, discloses the fallacy of this assumption. Fortunately, the difference is not completely significant in terms of statistical reliability, for as a fundamental trend it would be difficult to explain.

The chief interest of the findings, therefore, centers in the very substantial correlations of .52 and .69 obtained for the two groups. The fact that these coefficients are yielded by teachers' marks makes their size the more significant considering the dubious reliability of the criteria upon

[1] Odell in 1927 reported the following correlations for the relationship between achievement in college foreign language and high school foreign language average: .52, .50, .49, and .39. See Reference number 36 in the Bibliography at the end of this article.

[2] A comprehensive bibliography on this subject is given at the end of this article: See Bibliography A and B, references 1 to 29 inclusive.

[3] See Reference number 15 in the Bibliography at the end of this article.

which they are based.[4] The coefficient of .69 is the highest correlation obtained in a recent study of the forecasting efficiency of fifteen bases for

TABLE I

Correlations between Achievement at Various Stages in the *Same Foreign Language**

(1) *Author***	(2) *Date*	(3) *Correlation*	(1) *Author***	(2) *Date*	(3) *Correlation*
1. Spearman	1904	.87	38. Wood	1927	.628
2. Spearman	1904	.84	39. Crathorne	1923	.62
3. Tharp	1929	.83	40. Walters	1927	.62
4. Crathorne	1923	.80	41. Tharp	1929	.62
5. Crathorne	1923	.79	42. Crathorne	1923	.60
6. Crathorne	1923	.79	43. Crathorne	1923	.60
7. Brigham	1929	.788	44. Crathorne	1923	.58
8. Bohan	1929	.764	45. Crathorne	1923	.57
9. Crathorne	1923	.76	46. Crathorne	1923	.57
10. Walters	1927	.76	47. Crathorne	1923	.56
11. Crathorne	1923	.75	48. Crathorne	1923	.56
12. Tharp	1930	.75	49. Wood	1927	.553
13. Crathorne	1923	.74	50. Crathorne	1923	.55
14. Crathorne	1923	.74	51. Crathorne	1923	.53
15. Crathorne	1923	.73	52. Henmon	1929	.53
16. Crathorne	1923	.73	53. Bohan	1929	.512
17. Crathorne	1923	.73	54. Henmon	1929	.51
18. Crathorne	1923	.72	55. Walters	1927	.51
19. Crathorne	1923	.72	56. Crathorne	1923	.49
20. Tharp	1930	.72	57. Crathorne	1923	.47
21. Crathorne	1923	.71	58. Odell	1927	.46
22. Tharp	1930	.71	59. Crathorne	1923	.46
23. Bohan	1929	.705	60. Odell	1927	.44
24. Crathorne	1923	.70	61. Brigham	1929	.439
25. Crathorne	1923	.69	62. Whitman	1926	.43
26. Crathorne	1923	.69	63. Smith	1912	.43
27. Tharp	1930	.69	64. Walters	1927	.41
28. Tharp	1929	.69	65. Odell	1927	.40
29. Crathorne	1923	.67	66. Gilkey	1929	.390
30. Crathorne	1923	.67	67. Wood	1927	.389
31. Tharp	1929	.67	68. Odell	1927	.33
32. Brigham	1929	.661	69. Gilkey	1929	.322
33. Crathorne	1923	.65	70. Douglas, et al.	1929	.308
34. Crathorne	1923	.65	71. Crathorne	1923	.30
35. Crathorne	1923	.64	72. Smith	1912	.28
36. Crathorne	1923	.64	73. Crathorne	1923	.22
37. Weglein	1916	.63			

Summary:	Number of Correlations	Range	Median
	73	.87 to .22	.63

* *E.g.*, correlations between measures of achievement for the same students in the first semester of a foreign language, and in the second semester of the same language.

** Abstracts of the studies from which the data of the table are drawn are contained in Bibliography II. References can readily be identified through the name of the author and date.

[4] Walter Crosby Eells. "Reliability of Repeated Grading of Essay Type Examinations"; in *The Journal of Educational Psychology*. Vol. XXI, No. 1, pp. 48-52. (January, 1930.) The writer finds variability of human judgment in the same individual to be about the same as variability between different individuals—reliability coefficients ranging from .25 to .51.

TABLE II

Correlations between End-Semester Grades in Exploratory Language and First Semester Latin: Oakland Junior High Schools.

1930-1931

(1) Comparison	(2) N	(3) r	(4) P.E.r	(5) k	(6) E
1. Students continuing with a different teacher*	48	.6923	.0507	.7216	.2784
2. Students continuing with the same teacher	87	.5152	.0531	.8571	.1429

* The means and standard deviations for Group 1 are as follows:

Exploratory language grades	4.083	S.D.	.534
First semester Latin grades	4.062	S.D.	.775

The means and standard deviations for Group 2 are as follows:

Exploratory language grades	4.138	S.D.	.668
First Semester Latin grades	3.662	S.D.	.767

The five letter grades A, B, C, D, F were transmuted into point scores (5, 4, 3, 2, 1) and correlated using Sheppard's correction.

E represents Hull's basic index for forecasting efficiency: 1-k, or $\sqrt{1-r^2}$. It is ultimately the per cent of *perfect* prediction implied in the dependent coefficient of correlation. See Clark L. Hull. *Aptitude Testing.* World Book Company, Yonkers-on-Hudson, New York, 1928, 535 pages; pp. 268-271.

predicting achievement in beginning foreign language, and, if comparison is permissible, may be said to yield a higher forecasting efficiency than a battery of eight objectively measured prediction factors.[5] The higher values of the coefficients in comparison with findings previously reported by the writer for a similar study in San Diego,[6] are perhaps to be explained on the ground that the correlations for Oakland, involving only one language—Latin—as the criterion of achievement, are less susceptible to the vitiating influences of variable factors; and again they may be attributed to a more effective orientation of the Oakland course toward the prognostic aim.

As a whole the correlations are encouraging in view of their dependence upon semester marks, and, insofar as the data of the present study are concerned, suggest that the exploratory course may offer the most satisfactory basis for pupil classification and guidance in eighth grade foreign language, when homogeneous grouping on the basis of manifest interest and demonstrated ability is desired. These possibilities of the work should be realized as soon as more valid and more reliable measures of achievement are available, provided the classes are not conducted too much upon the play level,[7] but lead to concrete experience in the actualities of foreign language study. In schools where general language classes are impractical, much the same outcomes for guidance should be attained by conducting the first semester language classes on the orientation basis. Indeed, considering the exploratory objective of the junior high school curriculum, and the limited possibilities for prognosis noted for this level, attempts at prediction beyond those afforded by such introductory work

[5] See Reference number 19 in the Bibliography hereto.
[6] See Reference number 16 in the Bibliography hereto.
[7] See References 15 and 18 in the Bibliography hereto.

hardly seem either justifiable or necessary. In any case, the very substantial median correlation (.63) yielded by the historical survey for the relationship between achievement in successive semesters of foreign language work (Table I) points to favorable potentialities in the plan.

For prospective research in this connection, a case study of the records of sub-average students (*e.g.,* those ranking in the vicinity of one standard deviation below the mean) to determine the numerical chances of failure in *subsequent* semesters attending sub-average achievement in beginning classes, recommends itself as a propitious field for investigation. Such a study should be of interest in view of its bearing upon the popular notion that students making low records in the first semester are destined to inevitable failure in the more advanced stages. In fact, the frequent skewing of teachers' marks at the extremes may give some indication of a tendency among students to become either very proficient in foreign language work, or so poor as to court failure before the end of the course; no middle road appears tenable. It is thus possible that measures of relationship are often lowered by a general gravitation of students to opposite poles. If this is true, a greater validity in prognosis than that implied in a correlation of .69 may still be feasible in so far as the major objective of prediction—the predetermination of possibilities of failure—is concerned. For prospective research in this field the statistical approach developed by the writer in the computation of indices of discriminative validity should prove an effective auxiliary technique.*

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SALVAGING EDUCATION

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(Excerpts from an address before the annual teachers institute, Los Angeles, December 19, 1933.)

Citizens can be made to see that they [the children] must be cared for—and better than ever before. Citizens can be made to see that changed conditions bring added responsibilities for the schools: every breakdown—of family life, of church, of political ideals, of economic adjustment—sees the schools called on to substitute and repair.

* * * *

How can we salvage most from the tragedy in which we find ourselves and most soundly build a foundation on which the structure of education may be erected impregnably? First of all, I think we must talk less about the plight of the teacher with a starvation wage and more of the necessity of an education that will save and promote civilization. Arnold Tompkins once said that if physicians in their conventions discussed fees instead of fits and fevers they would forfeit the faith of the public. * * *

Can we not be wise enough to perceive that the best promise of improving our own conditions is convincing the public of the necessity of the commodity that we alone are prepared to produce? More important than that, however, is our altruistic obligation to civilization. We are informed, as the average citizen is not; we have a vision that is dark to his eyes of the importance, the necessity of education, of a real education, for the betterment of mankind.

We must clarify our minds as to why we have free public education. It is not a charity or a beneficence. Whenever so considered it is on a weak and shaky foundation, and it will topple whenever generosity is pinched by lowered incomes, by selfishness, or by an inequitable distribution of wealth. The only firm foundation is a wide-spread understanding and conviction that education is a long-term investment to make the State a better place in which to live and in which to make a living.

* * * *

Up to this time you have been concerned mostly with the machinery of education—buildings, budgets, methods, and the like. Now you are challenged to have a basic concern with the meaning of education. I am convinced that there is nothing of importance in this business of ours that cannot be expressed in words of one syllable. P.E.'s of d and sigmas are proper tools for the specialist; but the vital challenge to us is for clear understanding and conviction of this simple principle that we may pass on clear understanding and conviction to those who must support education in order that it may preserve civilization and make it better.

* * * *

We see inevitable failure in requiring of any youth that which is justifiable only by the inertia of tradition, or requiring of all youth that which is suitable and possible only to the few. We see failure in half-learning and in the frozen credits of inactive memory or the prompt ejections of valueless learning by minds concerned with other things that they judge more important. We see failure in the refusal of a great majority of our pupils to continue after compulsion ceases the activities in subjects that we have told them were essential. We see failure in the non-use in the leisure that is forced upon men and women of the resources that we taught them for intellectual recreation and growth. There has been abundant leisure during these past few years; and the failure of our graduates to turn to their book learning for satisfying occupations should prove to us that we have not given the kind of learning that man in the modern age needs and wants.

What should we do, then? . . . Probably never again in his lifetime will the professional educator have such an opportunity to clean house, to eject from the curriculum those subjects or details of subjects that he *knows* are not justifiable, to create courses of study that a reasonable judgment leads him to believe will contribute to attaining the ideals of citizenship that our society wants and needs to provide for the widely varying abilities and talents of every boy and every girl who will shortly, whatever the schools may do, become an adult citizen. Why should we not undertake this as a major professional obligation?

* * * *

Is society able to pay for this new education? In spite of the depression, which beclouds our judgment while it dims our hopes, there is abundant evidence that we as a people are able to pay for anything that we really want. We are still driving cars and buying cars and building roads on which to drive them. We have been spending more than five times as much for passenger cars as for education.

* * * *

But all figures have meaning only as they are related to others. As just stated, this vast sum is only one-fifth what we pay for passenger automobiles; it is less than we pay for tobacco; it is only two-fifths of what we pay for luxuries, such as soft drinks, candy, chewing gum, movies, rouge, and lipstick; and two-thirds the cost of life insurance premiums.

There are many who think we have too much education, that we should limit opportunities to a selected few. Not in a democracy. If every citizen has a vote, he must be made intelligent and informed. No selectivity, no discrimination, is possible. We must repeal the right of universal suffrage or continue and extend the opportunities for universal education. We have not yet gone far enough even for safety.

* * * *

I am still committed to the ideal that democracy, both as sound investment for its own good and as a contribution to the right of every individual to develop the best that is possible in him, must provide for every youth until it is ready for him to begin his work in the world. First, because of humanitarian sympathies and later because of our recognition of technological advances, which make possible the provision of the satisfaction of the normal wants of mankind with a steadily decreased amount of human labor, the age at which youth may enter upon work has been pushed up until now under the NRA it is in most industries eighteen. The result of this movement, which has been brought about by forces entirely beyond the control of education, is that literally hundreds of thousands of youth turn to the schools as the only alternative of vacuous and deteriorating leisure. The gates of industry are barred to protect adults who, because of families and other obligations, have a prior right to the jobs that are available. The public has not appreciated, as we must make them appreciate, that it has brought about conditions which tremendously increase the scope and, at the same time, the difficulty of the work of our secondary schools. Having brought about this condition, the public must sooner or later accept responsibility for providing for all youth in its enforced lengthened infancy.

It is much easier to propose and to defend the theory of universal education for all youth to the age of eighteen than to provide the variety that is appropriate to varied aptitudes and capacities and that insures dividends to the investing State. Common sense observation, as well as numerous scientific studies, reveals that many youths have entirely satisfied their academic curiosity and needs long before society permits them to work. It is partly our efforts to provide an education appropriate to them that has caused the public, with a traditional understanding of what education is, to say that we are wasting money on fads and frills.

* * * *

Better schools are the only sure source of national wealth and prosperity and happiness. But this does not mean that any education, however traditional and outworn, will do the trick. We need gasoline for automobiles; not musty fodder.

When citizens demand that we do away with the fads and frills in education, just what do they mean? As a rule, merely that the costs of education should be reduced. It has been shown repeatedly that the critics cannot agree on what the fads and the frills are. In New Jersey citizens were asked to vote on the items in the school program that should be eliminated. Every one that those seeking tax reduction had railed against as a fad or a frill was supported by a substantial majority. When in the city in which I had the honor to be a member of the board of education there was clamor, after every possible economy had been effected, for the elimination of the fads, we tentatively reduced the budget by dropping special services and told what they would be. The public would not stand for it. Every special service that would have been dropped had to be restored. . . . It can be shown without much difficulty that the very subjects or activities that the objectors would have us get rid of are the gasoline of this motor age. It is your business to show this convincingly and continuously. . . . We hear no demand for the elimination of frills in passenger automobiles, on which we spend five times as much as we do on education. There is no demand that we return to the good old days of the Model T. No; we discard the old car and buy another with more speed, more safety, more comfort because we are convinced that they are worth the money, which we somehow find because we know the cost is justified. When we justify the new education to the public, we shall win its intelligent support. . . . To return education to the 1900 style, we must also return society and industry and farming and everything else to the 1900 style. It cannot be done. We have not yet caught up with progress.

COMPARATIVE STUDY OF THE ACHIEVEMENT OF JUNIOR COLLEGE TRANSFERS IN CERTAIN SUBJECTS

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EVER since the formation of junior colleges and the transfer of their students to four-year colleges and universities, there has been considerable discussion as to whether the preparation of these transfers was as efficient as that of students in the four-year institutions. Many studies of this problem have been made; notably, those of Eells,[1] Hill,[2] and Hale.[3] All of these have attacked the problem from the same general point of view. The usual method has been to compare the mean grade-points earned per unit of work for the entire number of units attempted by a group of junior college transfers with the corresponding mean for a selected group of native students, or for some similar group. The present study proposes to attack another problem. Instead of considering the entire record of the students, it aims chiefly to compare the achievements of the students in certain subjects. To accomplish our purpose, the study will be divided into two parts. In the first, records in specific subjects in four main fields, English, modern foreign languages, social sciences, and physical sciences, form the basis for comparison. In the second, complete records in the eight "schools" into which Stanford University is divided form the basis. Details will be presented for the two parts in the order named.

This study was begun during the year 1931-32 while the writer was a graduate student in the Stanford School of Education. All data were taken directly from records in the registrar's office, to the members of which thanks are due for their splendid cooperation. To secure groups which were as nearly comparable as possible certain limitations were necessary. The study covered the period from the fall quarter, 1923 to the close of the summer quarter, 1931, including students who graduated as of October 9, 1931. *All* transfers from junior colleges and from four-year institutions who matriculated in the upper division between those dates with advanced credit of not less than 87 and not more than 105 quarter units, who graduated not later than October 9, 1931, and for whom Thorndike Intelligence Test scores and "major subjects" were available were included. These limitations finally reduced the number of junior college transfers to 448 and of transfers from four-year institutions to 369. It was desired to have a comparable group (control group) of native Stanford students; namely, students who matriculated in the uni-

[1] Eells, W. C., "University Records of Students from Junior Colleges." CALIFORNIA QUARTERLY OF SECONDARY EDUCATION, Vol. III, 1927-1928, pp. 301-317.
[2] Hill, M. E., "The Achievement of the Public Junior Colleges of California." CALIFORNIA QUARTERLY OF SECONDARY EDUCATION, Vol. VII, 1931-1932, pp. 41-52.
[3] Hale, W. W., "Assimilation, Success and Attitude of Junior College Graduates in Higher Institutions." Dissertation for the degree of Doctor of Education, Leland Stanford Junior University, June, 1932.

versity directly from the high schools (public or private). No lists of such students were obtainable, but there were available lists of freshman matriculants (men and women separately) covering a period beginning with the fall quarter, 1921. Students on these freshman lists would normally enter the upper division two years later and would thus fulfill the required time conditions. To insure a random selection and a proper distribution, every fifth name beginning with the fifth one on each list (The lists for the men and the women were considered separately by quarters.) was selected, beginning with the lists for October, 1921 and ending with those for June, 1928. From those listed the total number of men and women, who met all the prescribed conditions, was 447, or approximately the same as the number of junior college transfers. In all cases the data as to advanced credits, subjects carried, units passed, grade-points received, Thorndike scores, honors, etc., were taken directly from the students' permanent record cards. When questions arose, the matters involved were referred for interpretation to officials of the registrar's office. For all grades covered by this paper, grade-points were assigned to each unit undertaken as follows: grade A, 3 grade-points; B, 2; C, 1; + (passed, but grade not defined), 1; D, 0; conditioned and failed, 0; condition made up, 0. Although Stanford University changed its system of grade-points during the period covered, for units of work undertaken after the change the writer determined the grade-points to accord with the system given above.

We shall begin our comparison with the study of the achievement in specified subjects of the students in the three groups: 1. Native Stanford, students who entered the university directly from the high school and who form the "control group"; 2. Junior college transfers, students who entered the university directly after graduating from a junior college; and 3. Four-year transfers, students who entered the university with upper division standing after completing the lower division requirements in any other institution offering at least four full years of training beyond the high school. The results obtained are presented in Table I: Comparative Achievement in Certain Subjects. The data are limited to only certain subjects in the four general fields, since in others the number of students taking a given subject was so small as to make comparisons worthless. For the same reason segregation by sexes did not seem advisable. It did seem desirable to separate the data according to lower* and upper division courses in an attempt better to determine the effect of previous training. Under lower division are included only those courses which by announcements of the several departments are intended primarily for lower division students. Similarly under upper division are included only those courses intended primarily for upper division and graduate students. Of the data presented, "No." gives the number of individual students who pursued work in the given subject; "Mean" is the mean of the grade-point ratios received by various students for all courses in the subject; "P. E.$_M$"

* For various reasons upper division students, both native Stanford and transfers, find it necessary or desirable to take some lower division courses. Beginning foreign languages and social sciences offer good illustrations of subjects taken. The change of "major subject" or conflicts in time schedules suggest good reasons.

is self-explanatory. The writer realizes that the method of making the individual student the basis of comparison may be open to objections because the number of units undertaken by students in a given subject differs materially. However, we are interested mostly in individual achievement, and the method pursued gives us the mean of the individual accomplishment rather than the mean of the grade-points earned for all units taken in a given subject by a given group. To eliminate some of the objections, no student was included unless he had undertaken at least five units in a given subject.

TABLE I.

COMPARATIVE ACHIEVEMENT IN CERTAIN SUBJECTS

Subjects	*Lower Division*			*Upper Division*			*All*		
	No.	*Mean G.P.*	*P.E.*$_M$*	*No.*	*Mean G.P.*	*P.E.*$_M$*	*No.*	*Mean G.P.*	*P.E.*$_M$*
ENGLISH									
Stanford	73	1.65	.036	146	1.77	.025	219	1.73	.021
Junior College	73	1.70	.035	128	1.58	.026	201	1.62	.021
Four-Year	81	1.75	.033	105	1.63	.029	186	1.68	.022
MODERN FOREIGN LANGUAGES									
French									
Stanford	50	1.72	.043	34	1.72	.052	84	1.72	.033
Junior College	47	1.70	.043	29	1.62	.055	76	1.67	.034
Four-Year	47	1.50	.043	34	1.51	.051	81	1.51	.033
German									
Stanford	48	1.90	.044	17	2.01	.074	65	1.93	.038
Junior College	78	1.89	.034	21	1.81	.065	99	1.87	.030
Four-Year	66	1.93	.037	13	1.59	.082	79	1.88	.033
Spanish									
Stanford	23	1.61	.063	26	1.91	.060	49	1.77	.043
Junior College	33	1.98	.052	27	1.81	.057	60	1.90	.038
Four-Year	31	1.84	.053	18	1.72	.070	49	1.80	.042
SOCIAL SCIENCES									
Economics									
Stanford	256	1.56	.019	235	1.50	.020	491	1.53	.014
Junior College	264	1.54	.018	231	1.50	.024	495	1.52	.013
Four-Year	215	1.52	.020	179	1.43	.022	394	1.48	.015
History									
Stanford	238	1.77	.020	195	1.75	.022	433	1.76	.015
Junior College	205	1.47	.021	148	1.53	.024	353	1.49	.016
Four-Year	183	1.60	.022	148	1.63	.024	331	1.61	.016
Political Science									
Stanford	110	1.65	.029	134	1.55	.026	244	1.59	.019
Junior College	109	1.42	.028	113	1.42	.028	222	1.42	.020
Four-Year	93	1.43	.031	98	1.61	.030	191	1.52	.021
PHYSICAL SCIENCES									
Chemistry									
Stanford	34	1.59	.052	56	1.76	.041	90	1.70	.031
Junior College	24	1.45	.061	87	1.49	.032	111	1.48	.028
Four-Year	21	1.63	.065	63	1.45	.037	84	1.50	.032
Physics									
Stanford	83	1.42	.033	31	2.01	.054	114	1.58	.029
Junior College	82	1.59	.033	46	1.52	.043	128	1.56	.026
Four-Year	58	1.59	.039	31	1.66	.053	89	1.61	.031
Mathematics									
Stanford	82	1.48	.034	24	1.46	.062	106	1.48	.029
Junior College	120	1.73	.027	46	1.73	.043	166	1.73	.023
Four-Year	83	1.61	.033	35	1.79	.050	118	1.66	.018

* While the accuracy of derived results cannot exceed the accuracy of the original data, it seemed best on account of the small differences involved to carry out the probable errors one place further. The writer believes this method presents a better basis for the interpretation of the data.

Turning now directly to Table I, let us point out some of the more significant results. In English, we find the junior college transfers occupy-

ing the middle position in the lower division courses, but with no significant differences between the achievement of the three groups. On the other hand, in the upper division courses the junior college transfers are the lowest group. Using the well known formula: the probable error of the difference between two uncorrelated means is equal to the square root of the sum of the squares of the two means*, we find the difference between the mean achievement of the native Stanford group and that of the junior college transfers is 0.19, which is more than five times its P. E., 0.036. This indicates a very significant difference. A similar comparison between the native Stanford group and the four-year transfers shows the difference, 0.14, to be 3.7 times its P. E., 0.038, a difference usually considered significant. The fact that the native Stanford group showed the least accomplishment in the lower division courses, although not significantly so, and changed to marked superiority over both groups in upper division courses would immediately raise the question whether this superiority was not merely one of grades rather than of accomplishment and due to the native students' acquaintance with the methods and views of their instructors and, perhaps, even to some partiality of the latter for their own products.

In modern foreign languages few of the differences are significant, owing to the small number of students enrolled and the consequently large probable errors. Generally the junior college transfers maintain a middle position, although in most cases without significant differences. Here, too, as has been pointed out in the case of English, the native Stanford group showed a higher grade-point average than the junior college transfers in the upper division courses, although lower or just about the same in lower division courses. This is notably so in the case of Spanish in which the native Stanford group is 0.37 grade-point lower than the junior college group—a difference which is 4.6 times its P. E., 0.081—in lower division courses, but 0.10 grade-point higher in upper division courses. Undoubtedly much of the difference was due to the conditions suggested in connection with English.

In the social sciences, the differences in economics are slight and nowhere significant. The junior college transfers maintain their middle position. In history, the junior college group drops to the lowest position in both lower and upper division courses. In the lower division, the difference between the native Stanford and junior college groups is ten times its P. E., and in the upper division the difference is 6.7 times its P. E. Both differences are highly significant. In this case the four-year transfers showed higher means than the junior college transfers, almost significantly so, but also significantly lower than the native Stanford group. From all the data, it appears quite evident that the junior college transfers fail to meet the demands of the university courses in history. Whatever the cause, these results would seem to suggest to the responsible junior college officials a careful study of the situation.

The results in political science also show the junior college group with the lowest means. In the lower division courses, the difference between

*See Holzinger, Karl J., "Statistical Methods for Students in Education" (1928), formula 89, pp 235-237.

the native Stanford group and the junior college group is nearly six times its P. E. and therefore very significant. In the upper division the difference is only 3.4 times its P. E. The four-year transfers have the highest mean in upper division courses, and it is significantly higher than that of the junior college transfers.

Turning next to the physical sciences, we find a marked increase in the mean grade-point ratio of the native Stanford group in the upper division over that in the lower division, whereas the junior college transfers maintain about the same average grades in both divisions. In chemistry, in the lower division the mean of the junior college transfers is the lowest but not significantly different from that of the four-year transfers in the highest position. In the upper division the native Stanford group has again advanced to the highest position, which is not significantly above that of the junior college group in the middle position.

In physics, the junior college group leads the native Stanford group by a slightly significant difference in lower division courses, but the situation is reversed for upper division courses in which the native Stanford group leads by a highly significant difference. Familiarity with the apparatus and friendship with laboratory assistants whose grading is, perhaps, often open to question may account for this marked change as well as the conditions previously suggested. Moreover the groups are small and the results less reliable for that reason.

In mathematics, the junior college group leads all groups in lower division courses with a very significant lead over the native Stanford group in the lowest place. Both the native Stanford group, in the lowest position, and the junior college group, in the middle position, maintain essentially the same means for the upper division courses, but the numerical difference loses much of its significance owing to the small number of students involved.

Making all allowances for the better grades by the native Stanford group due to familiarity with the situation and methods of the instructors, it appears that the junior college transfers, whose mean mental ability as measured by their Thorndike Intelligence Test scores (See Table III.) is somewhat superior to that of the native Stanford students, do not meet the university standards in English, history, and political science; and to some extent, at least, in chemistry and physics. This situation may be due in part to the failure of the junior colleges to provide sufficient reference books for the library and suitable apparatus owing to their high cost. This is borne out to a certain degree by the efficiency of the work in mathematics which requires little besides capable instructors. Other factors may also enter, such as larger classes and the more extensive use of the lecture method of teaching in the university.

We will now examine the data supplied by Table II: Comparative Achievement by Major Subjects by Schools. The university regulations require each student by the beginning of his junior year, upon the completion of the lower division, to select as his "major subject" the work of some school or department. In general, the school or department may

TABLE II

COMPARATIVE ACHIEVEMENT BY MAJOR SUBJECTS BY SCHOOLS

Schools	*No. of Students*	*Grade-Point Ratios*				*Honors*	
		High	*Low*	*Mean*	*P.E.*$_M$*	*No.*	*Percent*
EDUCATION							
Stanford	12	2.48	1.11	1.75	.088	4	33.3
Junior College	8	2.78	1.33	1.97	.105	3	37.5
Four-Year	7	1.87	1.39	1.60	.112	0	00.0
MEDICINE							
Stanford	17	2.78	1.15	1.80	.074	4	23.5
Junior College	22	2.71	1.07	1.81	.064	4	18.2
Four-Year	18	2.14	1.27	1.67	.070	0	00.0
PHYSICAL SCIENCES							
Stanford	35	2.71	0.94	1.69	.051	8	22.9
Junior College	42	2.64	1.05	1.79	.046	6	14.3
Four-Year	38	2.78	1.01	1.74	.048	6	15.8
LETTERS							
Stanford	38	2.94	0.98	1.97	.049	11	28.9
Junior College	40	2.80	1.02	1.78	.047	5	12.5
Four-Year	41	2.67	1.01	1.88	.046	7	17.1
BIOLOGICAL SCIENCES							
Stanford	17	2.41	1.30	1.81	.074	4	23.5
Junior College	28	2.77	1.02	1.72	.056	4	14.3
Four-Year	26	2.81	0.91	1.66	.058	3	11.5
ENGINEERING							
Stanford	76	2.74	0.92	1.66	.035	13	17.1
Junior College	68	2.67	1.02	1.69	.036	15	22.1
Four-Year	50	2.71	1.00	1.53	.042	9	18.0
SOCIAL SCIENCES							
Stanford	213	2.95	0.92	1.64	.021	34	16.0
Junior College	225	2.87	1.00	1.59	.020	38	16.9
Four-Year	182	2.69	1.00	1.59	.022	28	15.4
LAW							
Stanford	39	2.65	1.02	1.54	.049	5	12.8
Junior College	10	1.96	1.02	1.43	.094	1	10.0
Four-Year	7	1.82	1.08	1.41	.112	0	00.0
ALL SCHOOLS							
Stanford	447	2.95	0.92	1.68	.014	83	18.6
Junior College	443	2.87	1.00	1.66	.014	76	17.2
Four-Year	369	2.81	0.91	1.64	.015	53	14.4

* See note to Table I relative to probable errors.

require one-third of the 180 quarter-units of work necessary for graduation to be taken within the department or school and, in addition, up to 30 units in associated fields. In applied sciences, the school or department may prescribe as many of the 180 units as are necessary for effective training. All the departments are grouped into eight schools. The data of Table II are segregated by schools according to the selection of major departments by the students. The order of the schools was determined by the relative achievement in each by the junior college transfers, who rank highest in Education and lowest in Law. The number of students indicates the number from each of the three groups whose major was in any one of the eight schools. The grade-point ratios cover *all* the units undertaken by each student in the upper division and are not limited solely to those taken in the major department or school. The "mean" is the mean of the averages of the individual students and not the mean of the total units attempted in a given school by a given group.

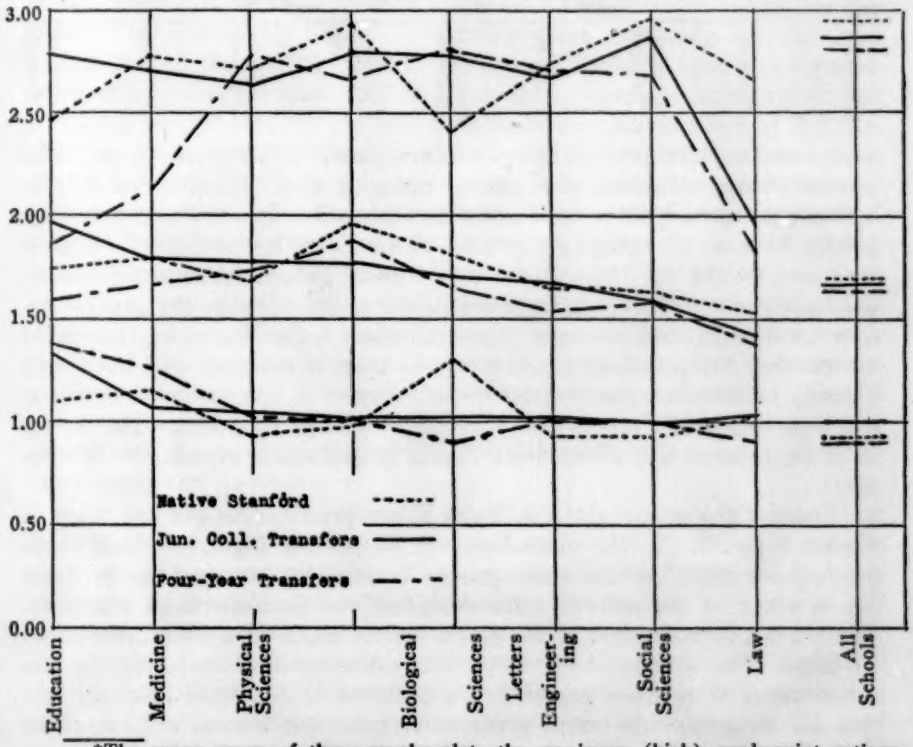
Beginning with the year 1921-1922, the university, in recognition of high scholastic attainment, has granted the Bachelor's degree "With distinction"

and "With great distinction." The rules for conferring these honors are too complicated and too extensive to be given here. It is sufficient to say they are not based solely upon grade-point ratios nor are they selected by absolute rank. The method is such as under normal circumstances to give the preference to native Stanford students. In the data of this table the two grades of honors have not been segregated. The percentage needs no explanation.

When we compare the means for the complete records of the students by schools, we find that the junior college transfers have the highest mean in four schools, the lowest in one, and tied for lowest in one; the native Stanford group also has the highest mean in four schools and the lowest in one; the four-year transfers are lowest in five schools and are highest in none. Thus, the actual figures show the native Stanford and junior college groups essentially equal in accomplishment. Owing to the small number of students, however, in each group, the probable errors are so large that there are no significant differences so far as the students' entire scholastic records are concerned. This is very well shown by the means of the three groups for all schools. These means differ in order by 0.02 grade-point which certainly has no significance as approximately 400 students are involved in

CHART 1

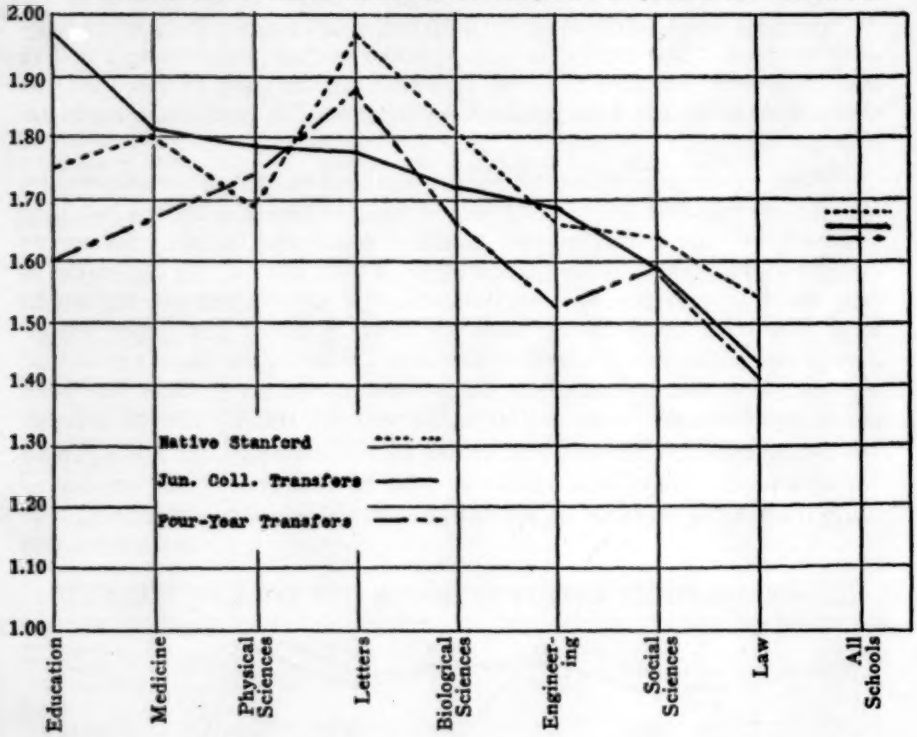
GRADE-POINT RATIOS BY MAJOR SUBJECTS BY SCHOOLS*



*The upper group of three graphs plots the maximum (high) grade-point rations, the middle group represents graphically the mean grade-point ratios, and the lower group plots the minimum (low) grade-point ratios. The graphs are based on the data of Table II.

CHART 2

MEAN GRADE-POINT RATIOS BY MAJOR SUBJECTS BY SCHOOLS



each case and the probable errors approximate 0.015 grade-point. The maximum and minimum grade-point ratios in each school serve only to indicate the spread. It is to be noted that the native Stanford and four-year groups have an advantage not granted to junior college transfers. This is indicated by the fact that in the two former groups students have been graduated who have not maintained in the upper division the general requirement of earning as many (twice as many under the new grade-point system now in operation) grade-points as units undertaken and have been allowed to transfer excess grade-points earned in the lower division,—a privilege apparently not extended to junior college transfers. The writer is of the opinion that all students should be put on an equality in this respect.

Some of the results given in Table II are presented in graphic form in Charts 1 and 2. In the first chart are plotted the high, low, and mean grade-point ratios for the three groups by schools, arranged, as in Table II, in order of the relative achievement of the junior college transfers. Chart 2 is a reproduction of the graph for the mean on a scale three times as large. The graphs show very clearly the decided variability in the achievement of the three groups in the different fields. Aside from the fact that for all groups the mean grade-point ratio was lowest in Law, there appears to be little uniformity among the groups. The reader is free to make such deductions as the data seem to warrant.

TABLE III

COMPARATIVE MEANS FOR THE SEVEN YEAR PERIOD BY SEXES

	Men			*Women*			*All*		
	No.	*Mean*	*P.E.*$_M$	*No.*	*Mean*	*P.E.*$_M$	*No.*	*Mean*	*P.E.*$_M$
A. THORNDIKE SCORES									
Stanford	362	77.85	.454*	85	80.11	.937*	447	78.28	.409*
Junior College	383	78.93	.484	65	81.91	1.174	448	79.36	.447
Four-Year	306	79.99	.532	61	82.46	1.192	367	80.40	.486
All	1051	78.87	.282	211	81.34	.630	1262	79.27	.257
B. THORNDIKE SCORES (INDICES)									
Stanford	362	.982	.006	85	1.011	.012	447	.988	.005
Junior College	383	.996	.006	65	1.033	.012	448	1.001	.006
Four-Year	306	1.009	.007	61	1.040	.015	367	1.014	.006
All	1051	.995	.004	211	1.026	.008	1262	1.000	.003
C. GRADE-POINT RATIOS									
Stanford	362	1.63	.016*	85	1.90	.033*	447	1.68	.014*
Junior College	383	1.62	.015	65	1.88	.037	448	1.66	.014
Four-Year	306	1.57	.017	61	1.97	.038	367	1.64	.015
All	1051	1.61	.009	211	1.91	.021	1262	1.66	.008
D. GRADE-POINT RATIOS (INDICES)									
Stanford	362	.982	.010	85	1.145	.020	447	1.012	.008
Junior College	383	.976	.009	65	1.133	.022	448	1.000	.008
Four-Year	306	.946	.010	61	1.187	.023	367	.988	.009
All	1051	.970	.005	211	1.151	.013	1262	1.000	.005
E. ACCOMPLISHMENT QUOTIENTS									
Stanford	362	1.000	.016	85	1.133	.033	447	1.024	.014
Junior College	383	.980	.015	65	1.097	.035	448	.999	.014
Four-Year	306	.937	.017	61	1.141	.037	367	.974	.014
All	1051	.975	.009	211	1.122	.021	1262	1.000	.008

* See note to Table I relative to probable errors.

In conclusion we shall present Table III: Comparative Means for the Seven-Year Period by Sexes. This table gives separately for the three groups and all the groups by sexes the mean Thorndike scores and grade-point ratios; also the same data in index form, based in each case on the mean for all the students of both sexes. Some individuals find it somewhat easier to note variations for various groups when the data is presented in index form. In the last section, E, is given the mean "accomplishment quotients" for the same groups. The "accomplishment quotient" may be defined as the ratio of achievement to ability. If we had perfect units of measurement for both achievement and ability and we were to arrange a given population by ranks, the accomplishment quotient would be 1.000 for all individuals who had exactly the same rank in both achievement and ability. In obtaining the present quotients we first reduced the grade-point ratios and Thorndike scores to indices on the basis indicated above. The quotient of the achievement, or grade-point ratio, index divided by the corresponding ability, or Thorndike score, index gave the accomplishment quotient.

The accomplishment quotient is an attempt to measure to what extent individuals or groups accomplish as much as their ability seems to indicate they should. Accepting our method as reasonably accurate we find that the men as a whole accomplish less than the women. Of course this assumes the Thorndike score is an accurate measure of ability and grade an equally accurate measure of achievement. Our results also show that the junior college transfers occupy a middle position for both sexes and that, with an accomplishment quotient approximately equal to 1.000, as a whole their achievement was normal.

THE TRAINING OF SCIENCE TEACHERS SERVING IN CALIFORNIA HIGH SCHOOLS

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IT WOULD be a matter of great difficulty and labor to investigate the course content of college classes in relation to the knowledge demanded of school teachers, but it seems well worth while to inquire into the general type of preparation that teachers receive for the work they are called upon to perform. In an attempt to get some definite information on this subject the training of science teachers serving in California high schools has been investigated.

Using the California School Directory for 1930-31 the teachers of science in California high schools, including junior high schools, have been listed with the subjects they teach and, as far as possible, the major and minor subjects they studied in college. The latter information was obtained from records in the office of the Division of Teacher Training and Certification of the State Board of Education through the co-operation of Mrs. Evelyn A. Clement and her staff, to whom we are greatly indebted for their assistance.

By surveying the information thus obtained some knowledge is gained as to whether the training was adequate for the work that was demanded. It must, however, be borne in mind that many teachers educate themselves for their tasks by attending summer school courses or taking post-graduate work of some sort. While this equips them, perhaps, for teaching subjects which they did not study in college, nevertheless it does not absolve their training schools from the suspicion that their training may not have been satisfactory. An individual may discover after graduation that his particular bent did not lie in the fields for which his college work prepared him, but it seems that this is, at least to some extent, a reflection on the training. It may be that the student is to blame for having no particular urge, but it is also possible that the training school has not studied sufficiently the needs of the teacher in training and does not offer the proper type of courses or does not advise its students adequately. It is with these provisos in mind that we proceed to an analysis of the facts.

The sciences selected for this study are biology (with its subdivisions of botany, physiology, and zoology), chemistry, physics, general science, and a vague group labelled "science," which may be any or all of the sciences listed above. Mathematics is not included, nor are vocational sciences such as agriculture, except when linked with other sciences. In all, 1429 teachers—544 women and 885 men—were listed. Of these, records of college training were obtained for 855, of which 296 were women and 559 were men. Records were thus found for 54.41 per cent of women science teachers and for 63.26 per cent of men science teachers. While

the numbers with records of college training are not as high as one would like, they are undoubtedly sufficient to give a very fair sample of what that training has been. It is, however, quite probable that where a record was not available the training was less satisfactory than the average, therefore our findings possibly tend to show a better than average training.

Before turning to a discussion of the records it might be interesting to note the distribution of the various sciences according to the sex of the teacher. The biological sciences are most commonly in the hands of women. Out of 169 posts calling for the teaching of one biological science 106 are held by women, and where biology is combined with other subjects women again usually predominate. In general science men and women are employed in approximately equal numbers—68 women and 69 men for the one subject only. Under the vague caption "science" we find rather more men than women. In chemistry there are more than twice as many men as women engaged—90 as against 42—while physics is found to be almost entirely in the hands of men—one woman and 50 men teach physics only, and although the proportion of women employed in teaching physics along with other subjects is a little higher, e.g. 5 women to 31 men in physics and one non-science, still it is most evident that in physics there is little demand for the woman teacher. The physical sciences are thus mainly taught by men while the biological sciences are more in the hands of women, although men are by no means excluded. In the whole field of science teaching men are in the majority, for out of 1429 teachers 885 are men.

One other general point might be emphasized here, that is, the extremely wide range of combinations taught. The majority of science teachers teach only science; 638 teach one science, 267 teach two sciences, and 53 teach more than two sciences. There are 31 combinations of two sciences and 14 combinations of more than two sciences, but most of these are logical enough. When we consider the tasks of the remaining 471 teachers the picture is not so satisfactory. Approximately half of these, 240, teach a combination of one science and one non-science, but there are no less than 77 different combinations ranging from the natural one of physics and mathematics to the less obvious ones of biology and correct speech or chemistry and band. In more complicated combinations of three or more sciences and non-sciences there are some 200 different bracketings of subjects handled by 231 teachers. There may be excellent reasons for this apparently chaotic condition but it certainly adds to the difficulty of training teachers when they may be called upon to teach almost any combination of subjects to be found in the ordinary fields of study.

Let us now turn to an examination of the training records. These have been arranged in tables in which the more important teaching fields have been set out rather fully, while the less important have been considerably condensed. In dealing with general science and "science" a less precise tabulation has been adopted as, owing to the more vague subject matter in these courses, it is extremely difficult to appraise justly the training. It may be noted also that in all cases as liberal an interpretation as possible

has been put on the training received. For example, in the case of teachers teaching biology, training in botany or zoology has been taken as a complete training and training in agriculture has been accepted for a variety of sciences.

Considerations of space forbid a detailed analysis of the figures but the seven tables appended give a reasonably clear picture of the facts, and in consequence we confine ourselves to a brief summary of conclusions. What strikes one most forcibly in examining the tables is the lack of complete college training in the subjects taught. Even when only one science is professed, at best about 75 per cent of the teachers were trained in college in the subject taught. In combinations of subjects the state of affairs is much worse. Thus out of 175 teachers teaching two sciences only 21 (12 per cent) are college trained in both sciences; 37 (21 per cent) appear either to have no training in any science or at best a training in a science they do not teach. Or again, where one science and one non-science are taught only 34 out of 143 (23.77 per cent) are trained, not always very adequately, in both subjects, while 31 (21.67 per cent) have no record of any college preparation in the subjects taught. In more complex combinations a brief analysis of the figures becomes more difficult, but the results are substantially the same. It is obvious that their college training has not prepared many teachers completely for the work they are called on to perform. Of the 855 teachers whose records were examined 115, that is to say, 13.45 per cent or about 1 in 7, showed no college training in the subjects they taught or even in allied subjects. At the other end of the scale, if we take teachers teaching only chemistry, who have the best record of all, only 75 per cent were trained in chemistry in college; while if we make an estimate, which must be at best rough but leans strongly to the side of generosity, of the percentage of fairly adequately trained teachers, it cannot be over 40 per cent.

We are thus forced to the conclusion that the type of training offered in colleges and universities is not meeting the demand of the high schools. The most obvious defect seems to be the amount of specialization demanded in college. Students are being trained primarily for research work, but it should be remembered by these institutions that for every research post available there must be several teaching "jobs" vacant and a good teacher is at least as well worth turning out as the average research worker. The high school teacher requires a special training, with width rather than narrowness emphasized, and it is well worth the while of any college or university to respond to this need.

But the schools themselves are not free from blame. The combinations of subjects that are taught are frequently fantastic both in number and in the things associated. This is not shown adequately in the tables, and it appears most clearly where several subjects are taught, and these are not listed, but reference has already been made to this. In some cases the combinations may have resulted from the special training of certain teachers or from unreasoning demands in small schools, but a simplification even of such combinations is surely possible. The combinations of subjects

which some teachers are asked to teach are so varied and apparently so haphazard that it is practically impossible to train students adequately for most of them. High school authorities would do well to come to some understanding regarding the combinations of teaching subjects demanded, for the present conditions are chaotic and render the adequate training of teachers almost impossible. Furthermore, this cannot conduce to successful instruction. Where schools are small a few well taught subjects would surely yield much more satisfactory results; where schools are large there would seem to be little excuse for many of the combinations called for.

Summary

1. A survey of the college training of 855 teachers of science reveals a surprisingly large number of untrained or but partially trained teachers; probably under 40 per cent have had adequate college training in the subjects they teach.

2. Colleges and universities are much to blame for this, as their courses aim at turning out research workers rather than teachers. The average college training in science is undoubtedly but little adapted to the needs of teachers in training.

3. The schools are not free from blame, for the great variety of combinations of subjects taught renders training extremely difficult.

NOTE. The tables on which this report is based here follow. Abbreviations of subjects used in these tables are according to Webster's International Dictionary. "M" before a subject indicates that the subject was taken as a major in college; "m" indicates a minor.

TABLE I.

TEACHERS TEACHING ONE SUBJECT.

Subject	*Number of teachers*	*Number with training*	*Trained in other Science*	*No science training*
Biology	78	M Biol. 12 m Biol. 8 M Bot. 11 m Entom. 1 M Physiol. 1 M Zool. 18 m Zool. 2	Agric. 9 Gen. Sci. 3 Phys. Sci. 6 Sci. 1	6
Botany	4	M Bot. 1 m Bot. 1	Chem. and Zool. 1 Physiol. 1	
Plant Science	1	Biol. 1		
Physiology	10	M Physiol. 2 m Physiol. 1 Bot. and Zool. 3	Chem. and Gen Sci. 1 Phys. 1	Phys. Educ. 1 Home Econ. 1
Zoology	1	M Zool. 1		
Total	94	63	23	8
Chemistry	57	M Chem. 31 m Chem. 8 Phys. Scis. 3	Agric. and Biol. 1 Agric. and Sci. 3 Agric. and Zool. 2 Agronomy 1 Biol. 2 Gen. Sci. 1 Phys. 1 Zool. 1	3
Total	57	42	12	3
Physics	23	M Phys. 6 m Phys. 8	Bio. 1 Bot. 1 Chem. 2 Elect. Eng. 1 Gen. Sc. 1	3
Total	23	14	6	3
General Science	73	M Gen. Sci. 1 m Gen. Sci. 1 m Gen. Sci. and Chem. 1 m Gen. Sci. and M Agric. 3 M Agric. m Chem. 2 M Agric. m Forestry 1 M Agric. m Sci. 2 Biol. Scis. and Phys. Scis. 7 Biol. Scis. 14 Phys. Scis. 22 Sci. 3		16
Total	73		57	16
Science	76	M Biol. Scis. and m Phys. Scis. 1 M Biol. Scis. 9 m Biol. Scis. 4 M Phys. Scis. and m Biol. Scis. 4 M Phys. Scis. 9 m Phys. Scis. 8 Gen. Sci. and Phys. Scis. 6 Gen. Scis. 5 Science 3 Agric. 1 Agric. and Biol. Scis. 1 Agric. and Gen. Sci. 2 Agric. and Phys. Scis. 1 Agric. and Sci. 3 Forestry and Chem. 1		18
Total	76		58	18

TABLE II.

TEACHERS TEACHING TWO SCIENCES.

Subjects	*Number of teachers*	*No. trained in both sciences*	*No. trained in one science*	*Trained in other science*	*No science training*
Biol. and Bot.	3		Biol. 1	Sci. 1 Zool. 1	
Biol. and Physiol.	13		Biol. 5 Physiol. 2	Agric. 1 Bot. 2 Zool. 3	
Biol. and Zool.	2	M Bot. m Zool. 1 M Zool. m Bot. 1			
Bot. and Physiol.	1		M Bot. m Zool. 1		
Physiol. and Zool.	1		Zool. 1		
Biol. and Chem.	13		Biol. 2 Chem. 4 Chem. and Zool. 2	Agric. 1 Agric. and Sci. 1 Bot. 2 Sci. 1	
Biol. and Gen. Sci.	37		Biol. Scis. 24 Biol. and Chem. 1 Phys. Scis. 4 Sci. 1 Agric. and Biol. 1 Agric. and Bacteriol. 1 Agric. and Chem. 1 Agric. and Gen. Sci. 1		3
Biol. and Phys.	6		Biol. 3 M Chem. m Zool and Physiol. 1	Agric. and Dom. Sci. 1	1
Bot. and Chem.	2	M Biol. m Chem. 1	m. Biol. M Phys. 1		
Bot. and Phys.	1		Biol. 1		
Physiol. and Chem.	3		Chem. 1	Biol. and Gen. Sci. 1	1
Physiol. and Gen. Sci.	2		Chem. and Phys. 1 Agric and Sci. 1		
Physiol. and Phys.	1			Zool. and Chem. 1	
Physiol. and Sci.	2			Zool. 1	1
Chem. and Phys.	29	Chem. and Phys. 6 Chem. and Elec. Engin. 1	Chem. 8 Phys. 8	Agric. and Bot. 1 Agric. and Sci. 3 Biol. 1 Mech. Engin. 1	
Chem. and Gen. Sci.	15		Chem. and Zool. 1 Chem. 9 Chem. and Phys. 2 Biol. 1 Geol. 1		1
Chem. and Sci.	4		Chem. and Phys. 3 Phys. 1		
Phys. and Gen. Sci.	13		Phys. 4 Gen. Sci. 2 Phys. and Chem. 1 Chem. and Biol. 1 Chem. 1 Biol. 1 Sci. 1		2
Gen. Sci. and Sci.	3		Agric and Sci. 1 Bot. and Phys. Sci. 1		1
Bot. and Agric.	1	Bot. and Agric. 1			
Biol. and Agric.	11	Agric. and Sci. 5	Zool. and Bot. 1 Agric. 3 Animal Husb. and Pomology 1	Chem. 1	
Chem. and Agric.	1	Chem. and Agric. 1			
Gen. Sci. and Agric.	4	Gen. Sci. and Dairying 1	Agric. and Biol. 1 Chem. 1		1
Gen. Sci. and Geog.	1				1
Gen. Sci. and Geol.	1		Chem. 1		
Sci. and Agric.	4	Sci. and Agric. 3			1
Sci. and Geog.	1		Geog. and Mil. Sci. 1		
Total	175	21	117	24	13

TABLE III.
TEACHERS TEACHING THREE OR MORE SCIENCES.

Subjects	*Number of teachers*	*Sciences in which trained*	*No science training*
Biol. Bot. Zool.	1	Zool. and Phys. 1	
Biol. Chem. Gen. Sci.	4	Chem. 2; Chem. and Phys. 1	1
Biol. Chem. Phys.	5	Biol. 2; Chem. 1; Agric. and Sci. 1 Animal Husb. 1	
Biol. Gen. Sci. Phys.	1	Phys. 1	
Biol. Gen. Phys. Sci.	2	Bot. and Agric. 1; Chem. 1	
Chem. Gen. Sci. Phys.	12	Chem. and Phys. 2; Chem. and Agric. 1; Chem. and Biol. 1; Chem. 5; Phys. 1; Sci. 1	1
Chem. Gen. Sci. Physiol.	2		2
Bot. Chem. Forestry, Garden.	1	Sci. 1	
Gen. Sci. Phys. Plant and Animal Sci.	1	Agric. and Biol. 1	
Biol. Chem. Gen. Sci.Phys.	4	Biol. Chem. Phys. 1; Chem. Phys. 1; Chem. 1; Agric. and Sci. 1	
Total	33	29	4

TABLE IV.
TEACHERS TEACHING ONE SCIENCE AND ONE NON-SCIENCE

Subjects	*Number of teachers*	*Trained in both subjects*	*Trained in science*	*Trained in non-science*	*No training in subjects taught*
Biol. and Art	1			Graphic Art 1	
Biol. and Coml. Subjs.	2		Biol. and Bot. 1 Bot. Zool. Geog. 1		
Biol. and Correct Speech	1		Bot. and Zool. 1		
Biol. and Eng.	2	Bot. and Eng. 1		Eng. 1	
Biol. and Hist.	3		Biol. 2	Hist. 1	
Biol. and Hyg.	3		Bot. 1		2
Biol. and Lat.	2	Biol. and Lat. 1		Lat. 1	
Biol. and Math.	6	Sci. and Math. 1	Biol. 2	Math. 1	2
Biol. and Mech. Dr.	1				1
Biol. and Phys. Educ.	6		Biol. 1 Bacteriol. Zool. 1	Phys. Educ. 3	1
Biol. and Woodwork	1				1
Physiol. and Phys. Educ.	1			Phys. Educ. 1	
Physiol. and Trig.	1			Math. 1	
Zool. and Man. Tr.	1	Biol. and Man. Tr. 1			
Zool. and Piano	1		Zool. 1		
Zool. and Psychol.	1	Physiol. and Psychol. 1			
Total	33	5	11	10	7
Chem. and Band	1				1
Chem. and Econ. and Sociol.	1	Chem. and Social Sci. 1			
Chem. and Eng.	1				1
Chem. and Football	1		Chem. 1		
Chem. and Health	1		Agric. 1		
Chem. and Hist.	2			Hist. 1	1
Chem. and Math.	8	Chem. and Math. 1 Sci. and Math. 1	Chem. 1	Math. 2	3
Total	15	3	3	3	6
Phys. and Aviation	1		Phys. 1		
Phys. and Hist.	1				1
Phys. and Man. Tr.	2		Phys. 1		1
Phys. and Math.	14	Phys. and Math. 3 Gen. Sci. and Math. 2	Phys. 3 Sci. and Agric. 1	Math. 1 Math. and Mech. Engin. 1	3
Total	18	5	6	2	5

Table IV continued on next page.

Table IV continued from preceding page.

Subjects	*Number of teachers*	*Trained in both subjects*	*Trained in science*	*Trained in non-science*	*No training in subjects taught*
Gen. Sci. and Basketry	1				1
Gen. Sci. and Civ.	1		Phys. Scis. 1		
Gen. Sci. and Dom. Sci.	2	Home Econ. and Sci. 2			
Gen. Sci. and Eng.	2		Chem. and Bot. 1	Eng. 1	
Gen. Sci. and Math.	15	Gen. Sci. and Math. 1 Chem. and Math. 4 Phys. and Math. 2	Biol. and Phys. 1 Chem. and Zool. 1 Gen. Sci. and Agric. 1 Sci. and Agric. 1 Chem. 1	Math. 2	1
Gen. Sci. and Mech. Dr.	1		Elec. Engin. 1		
Gen. Sci. and Phys. Educ.	5	Zool. Hyg. Phys. Educ. 1	Chem. 1 Agric. 2	Phys. Educ. 1	
Gen. Sci. and Soc. Sci.	4	Bot. and Hist. 1 Zool. and Hist. 1		Hist. and Econ. 1 Soc. Sci. 1	
Gen. Sci. and Span.	1				1
Total	32	12	11	6	3
Sci. and Art.	1		Phys. and Astron. 1		
Sci. and Civ.	1		Gen. Sci. 1		
Sci. and Craft	1	Bot. and Ind. Art 1			
Sci. and Dom. Sci.	3	Biol. and Home Making 1 Phys. and House Art 1	Chem. 1		
Sci. and Eng.	3		Chem and Phys. 1	Eng. 2	
Sci. and Hist.	2		Sci. and Agric. 1		1
Sci. and Math.	21	Bot. and Math. 1 Chem. and Math. 1 Gen. Sci. and Math. 1 Phys. and Math. 2	Chem. and Phys. 4 Phys. Scis. 1 Phys. and Zool. 1 Sci. 1	Math. 3	6
Sci. and Phys. Educ.	6		Biol. and Gen. Sci. 1 Biol. 1 Chem. and Phys. 1 Chem. 1 Sci. and Agric. 1		1
Sci. and Shop Sci.	1				1
Sci. and Soc. Sci.	1		Sci. 1		
Sci. and Span.	4	Chem. and Span. 1	Agric. 1	Span. 2	
Sci. and Typ.	1				1
Total	45	9	19	7	10
Grand Total	143	34	50	28	31

TABLE V†.

TEACHERS TEACHING ONE SCIENCE AND TWO OR MORE NON-SCIENCES.

Subjects	*Number of teachers*	*Trained in science*	*Trained in non-science only*	*No training in subjects taught*
Biol. and 2 non-scis.	20	Biol. 4; Agric. and Sci. 2; Agric. and Gen. Sci. 2; Agric. 1; Gen. Sci. 1*; Hyg. 1; Physiol. and Hyg. 1.	7	1
Chem. and 2 non-scis.	9	Chem. 1*; Chem. 2; Agric. and Gen. Sci. 1*.	4	1
Phys. and 2 non-scis.	7	Phys. 4*; Sci. 1*; Gen. Sci. 1*.		1
Gen. Sci. and 2 non-scis.	14	Bot. 1**; Chem. 1*; Nat. Sci. 1*; Agric. and Sci. 1*; Zool. 1*; Biol. and Chem. 1; Biol. and Phys. 1; Zool. 1.	6	
Sci. and 2 non-scis.	14	Chem. and Phys. 1*; Sci. 1; Spec. voc. sci. certif. 3.	4	5
Biol. and 3 non-scis.	3	Biol. 1.	2	
Chem. and 3 non-scis.	1		1	
Phys. and 3 non-scis.	6	Phys. 1*; Agric. and Gen. Sci. 1*.	2	2
Gen Sci. and 3 non-scis.	2		2	
Sci. and 3 non-scis.	3	Agric. and Sci. 1; Agric. and Bot. 1.	1	
Biol. and 4 non-scis.	3	Gen. Sci. 1*; Agric. 1.	1	
Chem. and 4 non-scis.	1			1
Phys. and 4 non-scis.	1		1	
Gen. Sci. and 4 non-scis.	1		1	
Chem. and 5 non-scis.	1		1	
Phys. and 5 non-scis.	1		1	
Total	87	42	34	11

†In tables V, VI and VII, *indicates training also in one non-science; **indicate training also in two non-sciences.

TABLE VI.

TEACHERS TEACHING TWO SCIENCES AND ONE OR MORE NON-SCIENCE.

Subjects	*Number of teachers*	*Trained in science*	*Trained in non-science only*	*No training in subjects taught*
Biol. and Bot. 1 non-sci.	1	Biol. 1.		
Biol. and Physiol. 1 non-sci.	2	Biol. 1; Bot. 1.		
Biol. and Chem 1 non-sci.	8	Biol. and Chem. 1; Chem. 3; Biol. Physiol. Agric. 1; Agric. 1*; Sci. 1.	1	
Biol. and Phys. 1 non-sci.	4	Phys. 1*; Gen. Sci 1*; Sci. 1.		1
Biol. and Gen. Sci. 1 non-sci.	10	Bot. and Zool. 1*; Zool. 1; Chem. and Phys. 1; Chem. 1; Agric. and Sci. 1; Agric. 1.	4	
Biol. and Sci. 1 non-sci.	1			1
Bot. and Gen. Sci. 1 non-sci.	1	Bot. and Biol. 1.		
Chem. and Phys. 1 non-sci.	10	Chem. and Phys 1*; Chem. 1*; Phys. 1*; Chem. 3; Chem. and Agric. 1; Metallurgy and Mining 1; Gen. Sci. and Agric. 1.		1
Chem. and Gen. Sci. 1 non-sci.	5	Chem. and Gen. Sci. 1; Chem. 1; Chem. and Agric. 1; Agric. and Sci. 1; Agric. 1.		
Chem. and Geog. 1 non-sci.	1	Chem. 1.		
Phys. and Gen. Sci. 1 non-sci.	4	Phys. and Chem. 1*; Phys. 1*; Phys. 1.		1
Gen. Sci. and Sci. 1 non-sci.	1	Chem. 1*		
Biol. and Physiol. 2 non-scis.	2		1	1
Biol. and Chem. 2 non-scis.	2	Agric. and Sci. 1; Agric. 1.		
Biol. and Phys. 2 non-scis.	4	Phys. and Chem. 1*; Phys. 1*; Bot. 1.		1
Biol. and Gen. Sci. 2 non-scis	3	Bot. 1; Agric. and Entom. 1; Geog. 1.		
Chem. and Gen. Sci. 2 non-scis.	2	Chem. and Biol. 1; Agric. and Sci. 1.		
Phys. and Gen. Sci. 2 non-scis.	3	Chem. and Phys. 1; Agric. and Sci. 1; Agric. 1*.		
Biol. and Chem. 3 non-scis.	1	Chem. 1*		
Biol. and Phys. 3 non-scis	2	Phys. 1*; Agric. and Sci. 1.		
Chem. and Gen. Sci. 3 non-scis.	1	Chem. 1.		
Total	68	56	6	6

TABLE VII.

TEACHERS TEACHING THREE OR MORE SCIENCES AND ONE OR MORE NON-SCIENCES.

Subjects	*Number of teachers*	*Trained in science*	*Trained in non-science only*	*No training in subjects taught*
Biol. Physiol. Chem. 1 non-sci.	2		1	1
Biol. Chem. Phys. 1 non-sci.	3	Sci. 1*; Bot. and Zool. 1; Agric. 1.		
Biol. Chem. Gen. Sci. 1 non-sci.	2	Chem. and Phys. 1; Chem. 1.		
Biol. Phys. Gen. Sci. 1 non-sci.	3	Phys. 1*; Biol. and Chem. 1; Bot. and Agric. 1.		
Chem. Phys. Gen. Sci. 1 non-sci.	8	Chem. and Phys. 1*; Chem. and Phys. 1; Phys. 2*; Phys., Biol. and Agric. 1; Agric. and Sci. 1; Zool. 1.	1	
Biol. Chem. Gen. Sci. 2 non-scis.	1	Chem. Zool. and Agric. 1.		
Biol. Phys. Gen. Sci. 2 non-scis.	3	Bot. and Phys. 1*; Chem. Phys. Zool. 1.		1
Chem. Phys. Gen. Sci. 2 non-scis.	2	Chem. and Phys. 1; Bot. and Zool. 1.		
Biol. Chem. Phys. Gen. Sci. 1 non-sci.	1	Biol. and Chem. 1.		
Biol. Chem. Phys. Gen. Sci. 2 non-scis.	1	Chem. and Phys. 1*.		
Total	26	22	2	2

Educational News and Comment

DR. WILLIAM HENRY SNYDER

In the article on "Pedagogical Fusion" in this number of THE QUARTERLY the author makes reference to the retirement of Dr. William Henry Snyder as head of the Los Angeles Junior College at the end of the current school year. When the Los Angeles Junior College was established in 1929 Dr. Snyder was taken from the principalship of the Hollywood High School and was appointed Director of the new institution. That institution, today notable in the development of American education, is the realization of Dr. Snyder's philosophy and ideals.

Dr. Snyder was graduated from Colby College in 1885 and took his M.A. degree from Harvard in 1888; was given the honorary Sc.D. by Colby in 1898. Before coming to California Dr. Snyder served for twenty years as teacher, head of department or principal in schools in Massachusetts, New York City and Philadelphia. He was principal of the Hollywood High School from 1908 to 1929.

An enthusiastic and tireless worker always, Dr. Snyder has found time throughout his professional career for authorship. He has been the co-author (with Davis) of "Physical Geography", "One Thousand Problems in Physics", and "Key to One Thousand Problems in Physics". His own texts, widely used in the schools of the United States, are: "First Year Science", "Everyday Science", "Manual and Notebook to Everyday Science", "General Science", "Laboratory Manual for General Science". Besides writing texts for the schools, Dr. Snyder has been the author of numerous magazine articles on education in scientific subjects.

For more than a quarter of a century Dr. Snyder has been an outstanding leader of recognized ability in the development of secondary education in California.

ENROLLMENT AT U. C. L. A.

The enrollment of students on the Los Angeles campus of the University of California, for the school year 1934, totals 6,784, according to announcement by Registrar H. M. Showman. This includes an enrollment of 6,500 students for the first half-year, and 5,842 students for the second half-year.

The enrollment, the registrar points out, is less than that of the school year 1932-33, when the total was 7,168 students. The decrease amounts to approximately 5½ per cent. Two years ago there was an enrollment during the school year, 1931-32, totaling 6,814, a number slightly greater than the attendance for the current school year.—*The California Monthly.*

NIELS P. NIELSON GOES TO STANFORD

Niels P. Nielson, former Chief of the Division of Health and Physical Education, California State Department of Education, since 1928, goes to Stanford as Associate Professor of Physical Education and Hygiene. Professor Nielson has written extensively on the subject of physical education and is at present collaborating with Professor Clark W. Hetherington on two books.

"THE AMERICAN SCHOOL SYSTEM"

A new book, with title above quoted, has just come from the press of Farrar and Rinehart, Inc., New York. The author, Dr. Aubrey A. Douglass, head of the department of education, Claremont Colleges.

This volume of 491 pages gives a broad outlook of the American system of free public education. Teachers, prospective teachers and laymen who want a better understanding of our public school system and its problems will find this volume both interesting and of real merit. Here follow the chapter titles: (1) The National School System, (2) The Cost of the Schools, (3) The Purpose of the Educational Program, (4) Education Before the Age of Six, (5) Origin and Development of Public Elementary Education, (6) Theory and Practice of Elementary Education, (7) Secondary Education, (8) Higher Education, (9) The

Curriculum, (10) The Principles of Method, (11) Measuring the Results of Instruction, (12) Training for Occupation, (13) Part-Time and Adult Education, (14) Education of Exceptional Children, (15) Rural Education, (16) Extra-Curricular Activities, (17) The Instructional Staff, (18) The Organization and Control of Public Education, (19) Issues in American Education.

SUMMER CONFERENCES

For many years it has been a policy of the California Society of Secondary Education and its predecessor (the old California High School Teachers' Association) to sponsor short conferences on current problems in education, in cooperation with the summer sessions at the universities and colleges in California. From one to six such conferences have been held annually in past years, at U.C., U.C.L.A., U.S.C., Stanford, Claremont, and College of the Pacific. This year two conferences will be held—one at Claremont Colleges, July 2 and 3, Dr. Aubrey A. Douglass, organizer; the other at U.C.L.A., July 9 and 10, Mr. Arthur Gould, Director in Charge.

CONFERENCE AT CLAREMONT COLLEGES

CURRENT SOCIAL, POLITICAL, AND ECONOMIC PROBLEMS

MONDAY, JULY 2

9:30 a. m. The New Deal and Public Administration—Frank M. Stewart, Professor of Political Science, University of California at Los Angeles.

10:45 a. m. The European Social-Political Scene—Mrs. W. H. Kerr, Claremont.

1:45 p. m. Economic Planning in an Educated Democracy — Frederick F. Houser, Attorney, Alhambra.

TUESDAY, JULY 3

9:30 a. m. Purpose and Organization of the S. E. R. A.—Virgil Dahl, Director, State Emergency Relief Association of Southern California.

10:45 a. m. New Developments in the Field of Adult Education—Mrs. Lucy Wilcox Adams, Associate Director, California Association for Adult Education.

1:45 p. m. The Process of Economic Recovery in the Pacific-Southwest—L. Elden Smith, Department of Research and Service, Security-First National Bank of Los Angeles.

Lunch at Claremont Inn.

Tea in the Patio each day.

CONFERENCE ON SECONDARY EDUCATION

A conference on problems in secondary education will be held under the auspices of the California Society of Secondary Education at the University of California at Los Angeles, July 9 and 10; Room 100, Education Building. Arthur Gould, Deputy Superintendent of Schools, Los Angeles, is the director in charge. The program will be as follows:

MONDAY, JULY 9

MORNING SESSION

Presiding:
DR. EDWARD W. HAUCK, Member, Board of Education, Los Angeles City Schools

Introductory Statement:
DR. GORDON S. WATKINS, Dean of the Summer Session, University of California at Los Angeles

Topic: "Plans for Progress in Secondary Education in California"
MR. JOHN A. SEXSON, Superintendent of Schools, Pasadena

Topic: "Commission on Relations Between Schools and Colleges"
DR. WILLIAM B. FEATHERSTONE, Director of High School Course of Study Section, Los Angeles City Schools

Discussion

AFTERNOON SESSION

Presiding:
MR. ALECK L. FERGUSON, Principal, Hoover High School, Glendale

Topic "Signs of Curriculum Progress in High Schools in California"
MR. EMIL LANGE, Coordinator, Curriculum and Research, Long Beach City Schools
PROFESSOR A. A. DOUGLASS, Claremont Colleges

Discussion

TUESDAY, JULY 10

MORNING SESSION

Presiding:
DEAN MARVIN L. DARSIE, University of California at Los Angeles

Topic: "Some New Teaching Practices in Secondary Schools"
MR. JOHN WILSON, Principal, North Long Beach High School
MR. ROBERT LEWIS, Teacher, San Fernando High School

Topic: "Reports on Visits to Progressive Schools"
MR. CURTIS WARREN, Superintendent of Schools, Burbank
DR. PERCY A. DAVIS, Superintendent of Schools, Santa Monica

Discussion

AFTERNOON SESSION

Presiding:
MR. G. DERWOOD BAKER, Principal, South Pasadena Junior High School

Topic: "Modern Languages in Secondary Education"
DR. WALTER V. KAULFERS, Long Beach Junior College

Topic: "Some New Departures in Teaching at the Junior High School Level"
MRS. ZELMA L. HUXTABLE, King Junior High School, Los Angeles
MR. HOWARD HICKS, Hamilton Junior High School, Long Beach
MISS O. NOVELLA HARTLEY, Burroughs Junior High School, Burbank
Discussion

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The twenty-ninth annual meeting of the American Association for the Advancement of Science will be held at the University of California, June 19 to 21. The program of Section Q, relating to education, here follows:

TUESDAY, JUNE 19
9:30 A. M., Room 123, Haviland Hall

Symposium on Investigations Bearing on Reading

1. Relationships Between Eye Structure and Reading Difficulties. (30 min.)
   PETER L. SPENCER, Associate Professor of Education, Claremont Colleges, Claremont, California
2. Visual Defects as Factors Influencing Achievement in Reading. (15 min.)
   L. P. FARRIS, Principal, Oakland High School, Oakland, California
3. Experiments in the Improvement of Reading. (30 min.)
   GRACE FERNALD, Associate Professor of Psychology, University of California at Los Angeles
4. Investigation of Reading Difficulties on the College Level. (15 min.)
   WILLIAM MASON DANNER, JR., Research Assistant in Psychology, Stanford University, California

AFTERNOON SESSION
1:30 P. M.

Symposium on Investigations in Subjects Other Than Reading

1. Work of the A.A.A.S., Committee on Place of Science in Education. (25 min.)
   OTIS W. CALDWELL, Chairman, Institute of School Experimentation, Teachers College, Columbia University, New York City
2. The Effect of Reading on Spelling in Secondary Schools and Colleges. (25 min.)
   LUTHER GILBERT, Lecturer in Education, University of California, Berkeley, California
3. Learning Difficulties in Arithmetic. (15 min.)
   VELMA WOODS, Graduate Student, University of California, Berkeley, California
4. An Investigation of Ability in the Reading of Experimental Literature in Education. (20 min.)
   WYMAN E. OLSON, Graduate Student, University of California, Berkeley, California

WEDNESDAY, JUNE 20
9:30 A. M., Room 123, Haviland Hall

Symposium on Investigations Bearing on Maturation

1. The Harvard Growth Studies. (50 min.)
   EDWARD LINCOLN, Assistant Professor of Education, Harvard University, Cambridge, Mass.
2. Questions Concerned with the Validity of the Mental Age Concept. (20 min.)
   HUBERT ARMSTRONG, Assistant Director of Child Welfare, City Schools, Oakland, California
3. Certain Physical and Physiological Aspects of Adolescent Development. (20 min.)
   HELEN B. PRYOR, Research Associate, Institute of Child Welfare, University of California, Berkeley, California

AFTERNOON SESSION
1:30 P. M.

Symposium on Investigations Bearing on Leadership and Responsibility in Schools

1. Study of the Prestige Element in Leadership. (15 min.)
   FLOYD CALDWELL, Associate Professor of Education, State Teachers College, Chico, California
2. Factors Related to Leadership on the High School Level. (25 min.)
   MARION BROWN, Dean of Girls, University High School, Oakland, California
3. Social and Educational Adjustments of the Under-Age Student in University. (25 min.)
   NOEL KEYS, Associate Professor of Education, University of California, Berkeley, California
4. Extent of Freedom and Responsibility Given Students in Different Types of Schools. (20 min.)
   GRAYSON N. KEFAUVER, Dean of the School of Education, Stanford University, California

Joint Sessions of Section Q and Section I and the Western Psychological Association

THURSDAY, JUNE 21
10:00 A. M., Room 2503, Life Sciences Building

Symposium on Investigations Bearing on Guidance

1. Application of Science to Guidance. (40 min.)
   TRUMAN L. KELLEY, Professor of Education, Harvard University, Cambridge, Mass.
2. The Factor of Interest in Guidance. (30 min.)
   EDWARD K. STRONG, Professor of Psychology, Stanford University, California
3. College Students of High Intelligence in a Personnel Program. (25 min.)
   C. GILBERT WRENN, Assistant Registrar and Director of Vocational Guidance, Stanford University, California

AFTERNOON SESSION
1:30 P. M.

Symposium on "Can Personality Be Measured?"